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Chile's National Interest in the Oceans

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CHILE'S NATIONAL INTEREST IN THE OCEANS

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I. INTRODUCTION:

This paper is intended as a first examination of the main aspects to be considered in the determination of Chile's national interest in the oceans. This is a treatment that falls within the framework of marine geography or that of marine affairs, as recently developed in this University.

As stated by Alexander[1], marine geography is the "study of the arrangements and interactions of phenomena under varied conditions within the marine environment", where the term phenomena includes "not only physical and cultural features of the sea and its boderlands, but also the processes which produce those features". It goes without saying that processes extend in time as well as in space and therefore a historical element is important in the understanding of the present and the approximate forecasting of major features of the future. Moreover, features and processes may be physical, socio-economic, or legal-political in nature".

Hard facts of marine geography of a country (marine features) are: the nature of their coastlines, the characteristics of their fishing grounds, their claims concerning offshore boundaries or other territories, protective and/or promotional attitudes relating marine activities, etc. Most of these features, may be considered in a dynamic fashion and constitute processes such as coastal building or degrading (erosion), water

masses movements, progressive development of international law of the sea, etc. The subject of marine geography (or marine affairs as modernly undertood) is thus, the study of "the forms these phenomena take, their pattern of distribution, and the nature of their relationship both with one another and with aspects of the land".

Now, what is it understood by marine environment? According to Alexander this "encompasses the coastal zone - including the adjacent land areas - the outer continental margin, and the deep ocean". Depending on the relative diversity and complexity of the marine environment, it will be more or less mandatory to classify it hierarchically, and/or regionally.

There are at least two general, very inclusive aspects of marine geography and marine affairs. One of this concerns itself principally with the physico-chemical nature of the marine environment, and the other is an approach through the concept of national marine interests in the sea, or marine orientation, with a strong social sciences base.

Marine orientation has been defined as "the overall process of man's adjustment to, and perception of the marine environment". This concept has lead to the proposition of a generalized model useful in the understanding of any of the world's countries national interest or orientation toward the sea. This model, as proposed by Alexander, contains five major components: accessibility, investment, dependence, perception and control, all of which form actually a continuum. Because of its practical

advantages, this is the basic outline to be followed in the development of the subject matter of this paper.

The subject is one which surely has never been the object of any moder writer, in spite of its apparent need for the country. Justice should be made, however, to those that have attempted more or less comprenhensive analysis of the problem, especially in connection with fishery development plans, scientific research, education, and institutional reorganizations both governmental and academic.

This study does not pretend to be comprehensive, first because data in many areas is not available and second, because of the intrinsically limited scope this type of paper. At any rate the global and integrated marine affairs approach, as applied in this case, it is hoped, will be the starting point of in depth, especialized studies on all aspects and domains of Marine Affairs. In the analysis of the marine interest of a country it is important to compile and evaluate particularly that data which will help to differentiate what is real fact of marine affairs and what is myth. Countries, as well as individuals, quite often attribute themselves conditions, capabilities, potentials, etc., which in the final analysis are nothing more than the product of wishful thinking or whishful perception. Progress cannot be based on such subjective criteria, or even on incomplete study of a partial set of the factors involved. The general task is large, even for a small and relatively new country as Chile and its serious attack

is the important challenge that all Chileans concerned with any of the aspects of Marine Affairs has to face sooner or later, the sooner the better.

The evolution of marine affairs in Chile is an active, on going process. As a developing country, and as in other aspects, maturity in the area under treatment has not been achieved as yet, major phases have either not been totally consolidated or even achieved. Some of the notions which pervade any present discussion on Chile and the seas are summarily the following.

The size and mobility of the Chilean merchant fleet in the past century is one of the first mentioned facts. Chilean vessels are said to have transported wheat and other products as far as California and Australia. These wanderings explain Chile's interest in Easter Island and Diego Ramirez, both located in the midst of the Pacific Ocean, although do not explain why other such possession events did not occur at a time when other islands of the South Pacific were likewise still unclaimed. It is stated that Chile was the grainfield of California during the 'gold rush'. Many Chileans joined too in the rush. Some 20.000 Chileans are supposed to have emigrated to California, mainly to San Francisco. Saltpeter was also widely distributed by Chilean vessels in that time and this activity called for some port facilities in the northern region of the country. However this may be, Chile's commitment with the oceans is a later development much to be improved, as will be seen in the following. Chile is primarily a mining and then an agricultural country. Mining went on even before the Spanish

arrived there, promoted by the northern Incas, later the Conquistadores not only did take whatever the Incas had collected but established there own mining enterprises. Rich mines, easy access to some of these non-renewable resources drew for years much of the labor and capital of the country, and still does. Agriculture, primitively structured, did not help the country meet the requirements of population growth and is probably one of the major causes of the traditional inflation and the utilization of hard currency in importing food instead of developing capital producing industries.

Chile, like other Latin American countries was not discovered and/or conquered by sea-loving Europeans. Almagro and Pedro de Valdivia both came to Chile afoot and on horses, following either the desert or the Andes approach, respectively. This has some significance, undoubtedly, in the mentality of the country that developed posteriorly.

The natives, that inhabited Chile before the arrival of the Spanish Conquistadores, did depend on the sea for survival, particularly those living in the coastal zone and in the Southern Archipelago region. There are indications that the southern Fueguians and Onas had a most refined adaptation to sea life, and depended almost exclusively from the sea for their subsistence[2].

Patriots of the Independence period did not see the importance of naval power to foster their plans until much later in the war. They always

thought of how to face invaders from the sea, once they had already touched land and it was not until several years later that their outlook and strategy changed and prepared for naval confrontation with the forces and vessels of the Colonial government. The sea had been up to that time a source of domination from Spain and a source of destruction and disruption of whatever peace the colony had at the time, from the part of pirates and corsairs enemies of Spain, that raided the coastal settlements. The first Chilean national naval squadron was set in 1818 and helped bring control of the South-eastern Pacific and independence to Peru.

Naval power was again instrumental in the settlement of the War of the Pacific against Peru and Bolivia in 1879, which by the way fixed the northern boundaries of the country. Chile was at the time a first rate naval power in Latin America.

The presence of the Oceans in Chile's life is uncontainable in spite that Chile's direct commitment with it has been incoherent up until the present and much of the intentions of the govenments have tended to give little or no importance to this major natural resource.

It is only very recent that Chile has really begun to look to the sea in search of food and a significant progress has been made in the general utilization of the living resources. Concern is being felt in connection with the lack of adequate port facilities and the insufficiency of the merchant marine fleet. The massive importation of foodstuffs of the

last years has put in evidence the outmoded quality of the port facilities, the lack of storage capacity and furthermore, the limitations of the land transportation to serve the sea.

In spite that the population of Chile has moved from the rural areas to the cities the movement does not show a connection with the proximity of the sea in the pertinent cases. As a matter of fact, except for a few areas near the sea that are growing in terms of population, because of an industrialization process which is connected with coastal zone, much of the Chilean population centers about the advantages of large cities or towns of the mining and agricultural zones. About one third of the population lives in the capital, Santiago. The people of the southern archipelago have been traditionally and naturally connected with the sea but their numbers are quite small.

Although very scanty data is available on recreation it may be stated that as better standards of living were being attained during the decade of the 60's more people were recreating by the sea and some summer resorts had been developing quite fast. Much of this came to a sudden stop in the first years of this decade as the result of political instability.

Sport fishing is almost inexistent although some typical development in this connection are being observed, such us minor demand and supply of live bait in the few places where angling is practiced.

One of the most significant uses of the sea in Chile, after fishing, and one of the most undesirable from the point of view of the ecologist and the conservationist, is that of dumping domestic and industrial sewages into the coastal sea. Conflicts are already felt in some densely populated and highly industrialized areas of the country. The intense utilization of some living resources of this same areas might be already under damaging pressures from pollution.

Chile is probably most well known because it was the first country to establish the principle of the 200 miles of resource economic zone of ocean jurisdiction, a doctrine which is about to be adopted by the majority of the countries of the world, or at the very least by the majority of the countries of the Third World. Municipal law of the sea has somewhat lagged behind and obviously now requires an updating to face the challenges of modern technology as a source of conflicts in the sea and coastal zone and the living resources of both.

In the same measure that Chile is not yet aware of the integrity of its marine affairs, the country lacks ocean and coastal zone policies. Furthermore, human resources are lacking particularly in the area of ocean engineering, marine technology, fishery technology, oceanography in general.

In connection with the knowledge of the ocean three are the main pilars in Chile, the Navy Hydrographic Department, the Fishery Development Institute and the Universities. Scientific research, however, is performed

still at too low a level and at a quantity which is far too inadequate to meet the needs; it has lacked incentive and financials as well as an appropriate number of well educated scientists. Fishery and resource research in general suffer from the same defects.

In general, marine scientists, university professors and instructors, government officials and the like, originate in large measure from the most varied careers and walks of life, many of which have nothing to do with the sea. Through more especialized education this is being changed at present.

II. ANALYSIS OF THE NATIONAL INDICES OF MARINE INTEREST OF CHILE:

As mentioned above, according to Alexander it is possible to distinguish a few categories of interests which a country can have in the sea, namely: a c c e s s i b i l i t y, i n v e s t m e n t, d e p e n d e n c e, and c o n t r o l. As stated above, it is the purpose of this paper to follow this methodology in determining a preliminary profile of national interes in the sea of Chile.

1. A c c e s s i b i l i t y: It is generally recognized that accessibility to the oceans and their resources is a basic fact of physical geography. Chile is in this sense what it might be termed an o c e a n i c s t a t e, that is, it faces an ocean without any close physical land boundary in the seaward direction or foreign limits of jurisdiction except that of the limiting neighboring countries. With a surface area of 756.280 Km^2 (not including the Chilean Antarctic Territory which encompasses more than 1.200.000 Km^2) and a coast-line of over 4.500 Km, Chile has a despro-portionate ratio of surface area to length of coastline. The whole set of relationships possible between the country and the sea are bound to be affected by this fact of physical geography. Chile's average width is of about 180 Km. This figure is striking if it is considered that Chile's 200-mile claim of adjacent sea jurisdiction gives it more surface area of sea than of land within its boundaries. The scarcity of its width could possibly make of Chile a "coastal-zone country" par excellence, particularly in some of the regions more linked to the sea. Models of coastal zone

management could possibly be advantageously tried and studied, under the light of the experience from more advanced countries, in Chile, where mediterranean areas do not have much of a weight as in countries with large extensions of inland areas.

In general the main features of the territory of Chile are: the Andes Cordillera to the East, the middle depression and the coastal ranges on the West, by the Pacific Ocean. Of these only the Andes constitute an uninterrupted feature along the country.

Latitudinally the country can be divided into five regions which are as follows: (1) the desert, (2) the region of transversal valleys, (3) the central valley region, (4) the lake region, and (5) the archipelago region. One might add another division to include: the sporadic offshore islands.

The desert region is characterized by a high coastal zone and a desertic inland depression. Except one, rivers which originate in the Andes do not reach the sea. Usually the coast lacks beaches due to the sudden rising of the coast right out of the ocean. Harbors are few, population is scarce and the main activities are the all important mining and since a few years back, fisheries. Originally the utilization of the resources of the northern sea was done through the exploitation of large guano deposits in this region. Climate is pleasant all year round and, except for "El Niño" years, rains are very rare. The coastal zone of this

region represents a certain touristic and recreation resource as yet little developed.

The transversal valleys region is characterized by numerous erosion valleys that run transversally to the main direction of the country. Several rivers come here to the sea and extensive beaches are found. The region is slighlty more populated both coastally and inland. Mining, agriculture and fishing are the main activities although there are too important recreational facilities.

The central valley region, the most populated of the country, has a main geographical feature, the fertile central valley, where most of the agriculture of the country takes place. The coastal range starts high in the northern areas and depresses regularly towards the south. Coastal plains vary in their importance throughout this region which also sees many rivers coming through from the Andes to the ocean. Much of the electric power of the country is originated in important hydroelectric installations in this region. Industry, in general, is well developed in this whole region. Its impact is not only felt in the economy but also in the ecology of rivers, lakes and the coastal sea. Fishing is also very important. Two of the largest fishing centers of the country are found here (Valparaiso and Talcahuano). Some of the best beaches and summer resorts are found in the region, also the best port facilities.

The lake region is characterized by a large number of sizable lakes,

which act as sediment traps for at least as many rivers which end at the sea in potentially rich estuaries of clean water all year round. The Andes actually are connected by the lakes to the middle depression. The coastal range is narrow when it exists and at times it is wall-like againts the sea. Near the southern-most part the middle depression joins the terraced relief of the coast at about 20 Km north of the mouth of the river Maullin. The region is a touristic one par excellence due to the scenic beauty of its lakes and the mountains, spotted with volcanoes, that surround them. Continental-waters sport fishing is extremely favorable in the lakes and rivers of the region. Much of the sparce population lives of and around these resources (mostly agricultural), having in general very little to do with the sea. Only recently some fishing effort, mostly artisanal, is being displayed in a few coastal villages of the region. It is interesting to note that the 1960 earthquake permitted a formerly fluvial town become an estuarine town through the sinking of the ground by as much as 5-7 feet. Ocean shipping is now possible up to the town.

The archipelago region which starts south of Puerto Montt, is doubtless the most marine-oriented region of the country, involving most its activities and population. The region has little in the way of industry and the sparse population occupies inself principally in fishing and agricultural activities. The geography of the region is here characterized by channels, fjords, coves, embayments and glaciers in the southernmost part. A distinctive feature of its physical oceanography is the extreme

expression of the tidal ranges a factor which produces strong currents and turbulence. This phenomenon, together with the physical geographical features above mentioned make of the region a particularly good one for aquiculture (mussels and oysters - both filter-feeding forms) and in fact some serious efforts are being made in this respect. Besides natural populations contribute to important canning industries.

Communications within the region is only possible through the sea and air. The region communicates its southernmost part with the mainland Chile only by utilizing roads on the Argentine side. Depths greater than those found normally in the continental shelf are found in the main channels. The seabed relief is complex and a continuation of the subaerial relief. Navigation is complicated but probably safer for small ships than open ocean navigation. It is a region of great potential for aquiculture and turism. The whole archipelago and internal waters should be one of conservation, primarily in view of its potential for mariculture.

The sporadic islands are constituted by Juan Fernandez Islands (Mas a Fuera and Mas a Tierra, and the rock named Santa Clara). These islands are at about 400 miles from the coast at the latitude of San Antonio. The islands of San Felix and San Ambrosio are at about the same distance from the coast but more to the north. Easter Island and Sala y Gomez (again the latter just a rock) are at distances of 4.500 and 4.000 Km from de Coast of Chile. Population in these islands is very small. The activities

of the major islands are much related with the sea. In Juan Fernadez (also known as Robinson Crusoe Island) there is a lobster and tourism industry. In Easter Island, a truly interesting place, tourism is at present a more important industry than fishing, although both have tremendous potentials.

In summary, each one of these regions has a different relationship with the oceans and their marine affairs are very differently interrelated to the land and other type of affairs. Facts of physcial geography are clearly establishing very distinct set-ups and a careful systematization and classification of their particular attributes is mandatory in the establishment of a sound marine policy.

One of the most outstanding features of the country as a whole is the extremely narrow continental shelf that extends along the country. The reasons for this phenomenon must be looked for in the processes of seabed spreading and continental drift. This fact of geography plus the presence of large extensions of sea (which is also a geographical fact of life) has been extremely important in the development of the doctrine of the economical resource zone or patrimonial sea concept which has been so transcendental in the international law of the sea. The lack of development of the continental shelf is particularly evident in the northern region. Towards the central and southern region some 20 miles of continental shelf may be found.

The oceanography of the Chilean sea is still very little known. It probably remains as one of the least known seas in the world. One hopes that this is not a sort of repraisal for our countries' progressive stand in respect of fisheries and resources in general. For the description of the principal oceanographic features of the Chilean seas the reader is directed to the references listed in the bibliography. At this point it is sufficient to mention that water masses of high productivity are to be found in the area due to upwelling processes estimulated both by the the direction of the prevalent winds and the rotation of the earth (Corioli's effect).

To conclude this paragraph it might be said that Chile's accessibility to the oceans is optimal for most purposes. The few good natural harbors have probably in large measure determined the density of population and the amount of activities in those few places where they are found. At the present state of development of the country this suffices although conflicts and tensions are beginning to be felt. There is practically no point in the country which is farther than about 200 Km from the coast. The accessibility to the Pacific means great possibilities of trade and communications with many countries. It also means intranational communication, particularly in what concerns the archipelago region and the offshore islands. Access to the Atlantic Ocean is possible by way of the Strait of Magellan, the Beagle Channel and around Cape Horn. The latter is the preferred route because of the intricacy of the above mentioned

Channel and Strait. The access to fishing grounds is obviously easy. The northern region enjoys good weather for most of the year and there is an immediate access to the rich anchoveta fishing grounds which are mostly within 20 miles from the coast. In this region also access to the tuna fishery is possible, although not much is made of it at present. In the transversal region there is access to several other fisheries such as whaling, shrimping, sardine and crab-shrimp fisheries. An important fishing ground over most of the littoral zone of central and southern Chile is the intertidal where many species of invertebrates are caught. The southern-most part of the country with a significant population lies around the Magellan Strait. Fishing grounds are, weather permitting, in the internal waters of the region and contribute to a large portion of the income of the region. King-crab, silver-side, sea-urchin, and several other fisheries are the most important here.

Antarctic seas have awaken the interest of Chile in the recent couple of years in connection with the abundance of krill (Euphausia spp.) formerly consumed in large quantities by the whales which are now much reduced in numbers.

Main world shipping lanes were plentiful and of easy access to Chile previous to the establishment of the railroad accross the Panama Isthmus and later the opening of the Panama Canal, which cut the sailing time considerably in the traffic around the Cape Horn. Much of Chile's dependence on the sea ended with this event; Valparaiso being until then

a flourishing port, declined drastically ever since. Its present development is due to internal economic forces more than to the services that once it offered to the world ocean shipping. The undershelf coal mining of Lota and Coronel also declined with the same cause but particularly with the break in of the internal combustion engine.

In their seasonal migrations whales pass through the Chilean seas within reasonable distance from the coast. This circumstance is at the base of the establishement of two land-based whaling factories (Quintay in the north and Chome in the south), however, this is an industry in continuous degradation.

As already mentioned, Chile has several islands in the South Pacific, each of which of course provides for their own jurisdictional sea and consequently access to particular natural resources existing in the areas involved, such as fisheries and tourism. Easter Island is probably one of the most exceptional places on earth. It is a natural gate to the rest of the South Pacific and countries of the Orient in the same way that it is a gate to the Americas. Regular flights already exist from Chile to Tahiti through Easter Island. The great touristic potential of Easter Island is still undeveloped. Its anthropological and archaeological value is immense. The island has been declared a national monument, although this condition is not effectively enforced. From the fisheries point of view several resources seem to have potential: the most important is lobster and some little known reef fishes. Farther out tuna is abundant. There are

reports of a Japanese tuna fleet operating in the neighborhood of Easter Island, within the 200 miles of jurisdictional waters. A subject in itself is the study of the fishery culture of the Easter Islanders, who recognize by name some 60 or so species of fish. They also had fully demarcated fishing grounds and still are the ones that know best the natural history of the marine life of the island.

Likewise the Archipelago of Juan Fernandez is rich in marine life, particularly in lobster (a different species than the one of Easter Island).

The southernmost part of Chile is a most practicable stepping board to the Antarctic Continent. From the last of the Chilean islands of the South American continent, to the first Antarctic island, the cruising takes only about 48 hours across the Drake Passage. It is because of the easy access of Chile to the Antarctic Continent that Chile's is one of the most natural claims in that continent, together with that of Argentina. Chile's claim overlaps with that of Argentina and England. This point will be dealt with later on. Chile has recently started looking to the Antarctic waters as fishing grounds. Recent U.S.S.R.'s estimates put the maximum sustainable yield of <u>krill</u> to the respectable figure of 200 million tons per year. Krill has also been detected in large quantities along the coast of Chile. New fishing grounds and new resources have been the subject of several Chilean and foreign expeditions and these have disclosed important stocks so far unutilized.

The openess of Chile to the Pacific Ocean has recently been the source of concern in relation with the atomic explosions in the Atoll of Mururoa. In 1966 the first investigations on radiactivity in the sea were performed on the Chilean seas. These basic data collected just before the first explosions has permitted to assess a light radioactive contamination in the sea water and a selected test organism. It is also important to note that the same accessibility to the oceans of Chile makes its coastal zone prone to the effects of another source of pollution: oil shipping. The first serious case of oil pollution was registered last year (the case of the Napier) in the archipelago region where due to the current system at that particular latitude the oil was pushed into the coastal zone instead of to the open sea as one might have expected.

Recent studies are considering the accessibility of Chile to the Antarctic Continent and to the large quantities of fresh-water in the form of icebergs, to help solve the scarcity of water in the northern region. Factibility studies point to this project as highly convenient and economical. Modern technology is also being considered to solve this problem through a thermonuclear plant in combination with a desalination plant.

The limited continental shelf does not promise much in the way of fossil fuels. Limited explorations in the region of Concepcion have not disclosed oil but instead very rich natural gas reserves. In the internal waters of the Magellan Strait likewise important discoveries of natural

gas have been made and plans for exploitation are under way.

2. I n v e s t m e n t: This is another index of the national interest in the oceans of any country and may take several forms. One of the most obvious types of investment is that relating to such features as fishing fleets, be these distant, near-shore or inshore fishing fleet, artisanal or industrial; merchant shipping, aquiculture facilities, offshore oil wells, marine recreation facilities, pollution control units, ocean-oriented educational and scientific units, marine-oriented extension units; publications, archives and libraries. Another type of investment is historical usage by populations that build strong ties and linkages with the sea. A third type of investment is conservation or restrictive usage. This may be brought about intranationally and/or internationally through specific legal bodies and instruments.

2.1. Fishing industry: Chile's fishery can be classified mainly as coastal fishery and inshore fishery[3]. Very little of distant-water fishing is performed by Chile at present. A coastal fishing is defined as that conducted by vessels making trips of strictly limited duration, but exceeding one day. One week would be a reasonable upper limit. This fishery includes for the most part shrimps and crab-shrimp. The main fishery of Chile is, however, a coastal fishery, which is defined as that conducted from the shore or without vessels, and those using vessels making trips of not more than one day of duration. In this category it is included the anchoveta, sardine, hake and all the littoral zone invertebrates that are exploited from the shore. All these fisheries, in the aggregate, make up most of the country's

fishery output. Also important is to mention the efforts on aquiculture that are being made since several years in the northern and southern regions of the country, particularly in the archipelago region.

An analysis of Chile's fishing gross product (Table I), shows that up until the 50's the fishing effort was small, probably consisting of espontaneous private investors and the traditional artisanal fishermen. It is possible to observe that the trend of those years has nothing to do with the present time trends. The examination in depth of this phenomenon is still an untouched subject and will probably shed light on the conveniences and inconveniences of too much government intervention.

From the middle 50's an explosive development begin to take place, based mainly on the capture of one single species: anchovy (Engraulis ringens), which has allowed Chile to become one of the first ten largest fishing countries of the world. The event is explained both by the discovery of the large anchovy resources in the Peruvian-North Chilean area and the governmental intervention in order to utilize it.

In regard to the development of Chilean fisheries the Development Corporation (Corporacion de Fomento de la Produccion - CORFO), founded in 1940, has played a most decisive role. In fact the economic development of Chile cannot be separated from the activities and functions of the Corporation, whose policy from the beginning contempalted the acquisition of

TABLE I: Chile's gross sea product catch for selected years between 1945 and 1971.

Year	Total Gross Sea Product(x1000 tons)	Fish (x 1000 tons)	Shellfish (x 1000 tons)
1945	47.0	32.6	14.4
1950	86.7	69.3	17.4
1954	143.5	104.4	39.1
1955	214.3	169.7	44.6
1960	339.6	304.6	35.0
1962	640.8	591.1	49.7
1963	762.8	706.3	56.5
1964	1.161.3	1.093.6	67.7
1965	708.8	643.0	65.8
1966	1.383.4	1.309.1	74.3
1967	1.052.8	969.0	83.3
1968	1.392.9	1.307.1	85.8
1969	1.095.1	1.009.8	85.3
1970	1.181.4	1.082.3	99.1
1971	1.494.3	1.396.5	97.8

crucial knowledge of the natural resources of the country and the planification of its development. Besides policies concerning the development of fuel and mechanical energy, the replacement of imports by nationally manufactured products, the refining and processing of Chile's main mining products (iron and copper), agriculture and fisheries were particularly considered by CORFO from the very onset of its activities. It has been quite early stated that: "as regards Chilean fisheries, what organization other than the Government could or would undertake the careful mapping of all the prospective uses of the different seafods available along the coast of 2.600 miles?[4] And so it was that through a series of measures the fishing industry was estimulated. These measures included many elements. Both local and foreign investors have participated, private and governmental such as CORFO itself which owns fish-processing plants. CORFO with large capital imputs from local sources and also with important contributions from external lending agencies such as the IBRD and the Export Import Bank, had invested up until 1965, more than $30 million since 1950, mainly in northern Chile for fish reduction, canning, and freezing installations[5]. Some of the plants are owned by CORFO; others have been established by private investors with liberal financial aid from CORFO. Joint ventures between Chilean and foreign companies have involved the U.S., Japan, South Africa, Norway and West Germany. The export of fishery products is actively supported by the government. Especial legislation permitted free importation of fishing craft, fishing gear and manufacturing equipment. Consessions on taxes have also been granted.

Thus, an explosive development was estimulated and its first crisis with the realities of the utilization of renewable resources came during the low anchovy year 1965[6]. By that time already the Chilean fishing industry, especially the fish meal sector, had a capacity for processing 2.3-2.5 million tons of raw materials per year and a potential annual output of 400.000 to 455.000 tons of fish meal and 50.000 to 60.000 tons of fish oil. If it is recalled that in 1965 the total catch of fin fish was only of 643.000 tons, of which only 438.000 tons were anchovy (the main species in the fish meal and oil industry) then it is possible to see that this year was probably the most wasteful one in the fisheries of Chile. Only 93.000 tons of fish meal and 10.400 tons of oil were produced, that is 23% of the fish meal capacity and 20% of the fish oil capacity were then occupied. Many plants closed down and about hundred fishing vessels went out of commission in that year.

The situation above described may be a basic characteristic of both the Chilean and the Peruvian anchovy fisheries. The early governmentaly initiated industry in both countries developed with "little planning, basic knowledge and experience"[7]. Overinvestment and missallocation of the resources is the rule in both cases. For Peru and Chile, in what the fishery of anchoveta is concerned the problem to face is how to diminish the overcapacity in the catching and in the processing phases so that these will not signify a pressure on the governments and prevent them from applying sound measures of resource management as may be recommended by the fishery research. The importance of this factor is exemplified by Peru

By utilizing economically efficient catching management programs, this country would be able to save up to $ 20 million annually. The savings in the processing phase would also be significant[8]. A fisheries management program should have a double goal: (1) to protect the resource from over-exploitation, and (2) to prevent overinvestment and economic waste. According to Holmsen in the fishery of anchovy these goals can be achieved by restrictions either " on the fleet or on the factories or on both". What are the efforts in this connection in Chile is not apparent from the literature available to the writer.

The Chilean fishing fleet in 1971 consisted of 279 fishing vessels (of more than 10 tons). This figure is larger by seven units as compared to that of 1970. Most of these vessels (123) are engaged in the anchovy fishing and were based in ARica, Iquique, Tocopilla and Mejillones. The sardine fleet had 48 vessels and the shrimp fleet 47; tuna and hake fishing vessels make up the total[9]. The total capital value is of the order of $ 38 millions.

The composition of Chile's fishery catch has experienced remarkable changes throughout time, as evidenced by the following data (Table II). The magnitude of the qualitative and quantitative changes occurred in Chile's fisheries within barely 20 years, can only be explained through the large governmental imput into the sector during all these years. Attention must be paid, however, to the fact that most of the growth of the Chilean fisheries is due to one single species: anchoveta.

TABLE II: Chile's gross sea product catch by kind of fish, 1945 and 1971.

Fin-fish	Gross catch in tons 1945	1971
1. Anchovy (Anchoa)	253	966.865
2. Sardine (Sardina)	2.872	174.855
3. Hard-tail Jack (Jurel)	*	158.442
4. Hake (Merluza)	11.083	73.516
5. Snake mackerel (Sierra)	2.632	5.382
6. Cusk eel (Congrio)	1.790	3.622
7. Amber fish (Cojinova	*	1.922
8. Bonito (Bonito)	592	1.680
9. Corvina (Corvina)	*	1.487
10. Chimaera (Pejegallo)	*	1.102
11. Silverside (Pejerrey)	*	810
12. Grunt (Cabinza)	*	680
13. Flat herring (Machuelo)	*	435
14. Flat fish (Lenguado)	*	413
15. Antarctic cod (Robalo)	*	352
16. Sea bass (Cabrilla)	*	256
17. Sword fish (Pez espada)	*	181
18. Dog fish (Tollo)	*	176
19. Tuna (Atun)	*	168
20. Mullet (Lisa)	*	157
21. Ocean white fish (Blanquillo)	*	23
22. Other fish	13.401	4.204
Shell-fish - Crustaceans		
1. Crab-shrimp (Langostino)	*	37.577
2. Shrimp (Camaron)	*	9.244
3. Barnacles (Picoroco)	*	1.151
4. Crabs (Pancora)	*	1.082
5. King crab (Centolla)	*	371
6. Lobster (Langosta)	*	47
Molluscs		
1. Mussels (Chorito)	5.362	24.358
2. Clams (Almeja)	499	7.204
3. Limpets (Loco)	811	4.962
4. Cuttle fish (Jibia)	*	124
5. Oyster (Ostra)	*	55
Other species		
1. Sea-urchin (Erizo)	1.153	4.180
2. Tunicates (Piure)	*	2.980
3. Others	2.472	4.506

It is possible to observe in Table II that several new resources entered the commercial fishery system within the time considered. Both fin-fish and shell-fish contributed to the total fisheries by large increments, but those for fin-fish are considerably more important. The whole group of Crustaceans came into commercially important utilization within this period. It should be kept in mind, however, that anchovy makes in 1971 71% of the total catch of fin-fish, thereby setting up the tonic for many of the parameters of the Chilean fishery, although its value is only about 1/3 of the total value. As we have previously seen, about 44% of the fishing fleet is occupied in this resource and it is concentrated in the northern region of Chile. The anchovy fishery of Chile is considered to be the result of the marginal distribution to the south of the species[10]. This is evidenced by the fact that present catch in Chile is relatively inelastic with changes in effort and by the fact that in Peruvian waters the annual catch for the years 1964-71 have been consistently over 7 million tons, and in the years 1968, 1970 and 1971 the catch has exceeded the 10 million tons mark.

The instability of the anchoveta fishery has been recurrently felt in Chile in some years, as it is possible to observe in Table I. The low catches were due basically to the low abundance of the resource in the usual areas or capture. One of the basic policies of Chilean fisheries is that of diversifying the efforts and investments so as to not depend excessively on only one fishery, which by its particular ecological characteristics may be naturally unstable. Continuous monitoring of the oceanography and fishery biology of the stocks in the area, the other resources and

hopefully of the entire ecosystem, are a must in order to achieve convenient stages of management.

In 1971 of the 1.494.383 metric tons of fish landed, about 6% (91.454 metric tons) was sold on local markets for immediate consumption. The remaining 94% (1.402.929 tons) was used in the production of 343.482 m. tons of processed seafood commodities. The latter brakes down to 17.833 tons of edible fishery products and 325.649 tons of inedible products. The resultant utilization retio is of 4 Kg of raw fish for 1 Kg of processed fish[11].

Also in 1971, the inedible production reached an all-time high of fish-meal of 263.131 tons which represents one of Chile's most important fishery commodities. About 75% of this output was derived from anchovies (194.034 tons). Fish oil contributed with 62.518 m. tons, half of which derives from the processing of anchovies and the remaining from jack mackerel, pilchards, hake and other species. Most of the fish oil production is centered in the northern region, of course (Iquique with 43% and Arica with 41% of the total production).

The edible portion of the fisheries brakes down in the following commodities in 1971:

Canned.....	10.507 m.tons
Frozen.....	6.973 " "
Salted/dried.....	305 " "
Smoked.....	48 " "
Total	17.833 " "

The 10.507 m. tons of canned fish utilized about 48.824 tons of raw fish, that is a 21% of utilization, mostly of jack mackerel. The product is sold under the label of "salmon". Table III shows the production of canned seafood by species for 1971.

TABLE III: Chile's production of canned seafoods, 1971.

Species		Quantity (m.tons)
Fish:	Chilean jack mackerel	3.374
	Sardine or Chilean pilchard	2.035
	Bonito	584
	Anchovy	126
	Tuna	62
	S.E. Pacific menhaden	60
	South Pacific breams	60
	White snake mackerel	27
	Hake	17
	Silversides	16
	Grunts	4
	Pacific croakers	2
	Other fish	28
	Total	8.395
Crustaceans:	Langostinos	130
	Southern king crab	67
	Shrimp	28
	Barnacles	13
	Total	246
Molluscs:	Mussels	1.511
	Clams	33
	Sea snails	45
	Total	1.589
Others:	Sea urchins	24
	Sea squirts	9
	Other	244
	Total	277
Grand total		10.507

Frozen sea products consisted mainly of hake (46%) next come the langostinos (33%) and shrimps (17%). Table IV shows the data on frozen fishfood production for 1971.

TABLE IV: Chile's procution of frozen fishery products, 1971.

Species	Quantity (m. tons)
Fish:	
Hake	3.219
Elephant fish	83
Pacific croakers	39
Silversides	24
South Pacific breams	9
Cusk eels	8
White snake mackerel	1
Total	3.383
Crustaceans:	
Langostinos	2.319
Shrimp	1.189
Southern king crab	38
Total	3.543
Molluscs:	
Mussels	5
Clams	3
Sea snails	2
Other	26
Total	36
Other:	
Other	11
Total	11
Grand total	6.973

Hake is also important in the production of salted and dried seafoods (68%), (Table V).

TABLE V: Chile's production of salted-dried seafoods, 1971.

Species	Quantity (m. tons)
Hake	209
Mussels	77
Elephant fish	8
Rock cod	1
Other	10
Total	305

A small amount of smoked seafood consists mainly of Chilean jack mackerel, (see Table VI).

TABLE VI: Chile's production of smoked seafoods, 1971.

Species	Quantity (m. tons)
Chilean jack mackerel.....	28
Rock cod.....	9
Mussels.....	8
Hake.....	2
Total.....	47

Chile's 1971 volume and value of exported fishery products was of 236.922 metric tons and $47.918.429, respectively, figures that represent a 56% increase from the exportations of 1970 of volume and a 60% increase in value. As noted before the large amounts of fishmeal produced accounted for about 80% of all exports by quantity and 60% of fishery exports in terms of value. Table VII shows Chile's 1971 exports both in quantity and value.

TABLE VII: Chile's fishery exports, by quantity and value, 1971.

Commodity	Quantity (m.tons)	Value ($)
Fresh or chilled:		
Fish.....	47.5	15.244
Shellfish.....	22.5	21.498
Total.....	70.0	36.742
Fresh, chilled or frozen:		
Hake.....	1.835.7	1.105.003
Total.....	1.835.7	1.105.003
Frozen:		
Fish.....	137.0	46.418

Langostinos	2.452.1	6.456.118
Shrimp	962.9	2.943.506
Shellfish, nes	10.9	8.410
Total	3.562.9	9.454.452
Meal:		
Fish	185.602.5	28.290.006
Fish, crustaceans and molluscs	200.0	52.318
Crustaceans	2.982.2	207.178
Total	188.784.7	28.549.502
Oil:		
Crude fish	11.1	5.612
Refined fish	2.257.4	335.365
Fish liver	34.521.9	6.353.168
Whale	46.6	16.212
Total,	36.837.0	6.710.357
Canned:		
Anchovy filets	.1	293
Shrimp	28.4	315.904
King crab	23.5	51.032
Clams	13.3	15.233
Mussels	4.4	7.976
Sea snails	11.5	21.410
Other	127.9	38.916
Total	209.1	450.764
Other:		
Roe	7.4	2.718
Seaweeds, nes	5.483.2	1.261.801
Agar-agar	120.8	343.570
Conch meat	.5	20
Other	11.0	3.500
Total	5.622.9	1.611.609
Grand total	236.922.3	47.918.429

Chile also imports a small variety of fishery products to a volume of 327.6 m. tons and a value of $357.286 for the year 1971.

As it is obvious, both the government and the industry are engaged in a policy to emphasize the expansion and diversification of the processed, edible seafood industry in order to break away from the heavy reliance on its fishmeal and fish oil industry[12].

In the following Table VIII a list of the major Chilean seafood enterprises is given (data from 1969).

TABLE VIII: Major Chilean seafood enterprises up to 1969.

Location	Firm	Activities	
Arica:	Empresa Pesquera Eperva	a, b	*
	Empresa Pesquera Indo, S.A	a, b	*
	Sociedad Pesquera El Morro Ltda	a, b	*
	Sociedad Maritima Pesquera Peña Chica Ltda	a, b	*
Iquique:	Industria Pesquera Alimar Norte Ltda	a, b	*
	Pesquera America S.A	a, b	*
	Sociedad Pesquera Altamar Ltda	e, f	
	Sociedad Pesquera Cachagua Ltda	a, b	*
	Pesquera Delucchi y Cia	a, b	*
	Empresa Pesquera Eperva S.A	a, b	*
	Empresa Pesquera Galeon Ltda	a, b	*
	Sociedad Pesquera Guanaye S.A	a, b	*
	Industria Pesquera Horizonte S.A	a, b	*
	Industone S.A.P	a, b	*
	Pesquera Iquique S.A	a, b, c, d,	*
	Sociedad Pesquera del Norte Ltda	a, b	*
	Pesquera del Pacifico S.A	a, b, c,	
	Pedro Ostojic	e, f,	*
	Pesquera Patache Ltda	a, b,	*
	Empresa Pesquera Tarapaca S.A	a, b, c, d,	*
Caleta Patillo:	Pesquera Internacional Ltda	a, b,	*
Tocopilla:	Empresa Pesquera San Pedro S.A	a, b,	*
Mejillones:	Alsina y Pita (OIPEM)	a, b,	
	Pesquera Coloso Ltda	a, b,	*
Antofagasta:	Alsina y Pita (CIPA)	a, b, c,	*
	Industria Pesquera Zlatar	a, b, c,	*

Taltal:	Compania Pesquera Taltal S.A.	a, b, e, ... *
Caldera:	Industria Pesquera Armali e Hijo Ltda.	a, b, c, ... *
Tongoy:	Sociedad Pesquera Tongoy Ltda.	e, f, ...
Coquimbo:	S.A.C. e I. San Jose de Coquimbo.	a, b, c, d, *
	Industrias Pesqueras de Guayacan S.A.	a, b, c, d, *
Quintero:	Industria Pesquera de Altamar ISESA S.A.	a, b, j, d, *
Vina del Mar:	Productos Congelados del Mar Ltda.	a, d, ... *
Valparaiso:	Sociedad Pesquera Falken Ltda,	c, j, ... *
	Sociedad Pesquera Industrial Ruiz Ltda.	c, d, ... *
	Empresa Pesquera Robinson Crusoe S.A.	c, d, ...
	Sociedad Conservas Portugal Ltda.	c, d, e, f, *
	Sociedad Pesquera Stelaris Ltda.	d, ... *
Calera:	Algas Marinas S.A.	g, ...
Santiago:	Productos Quimicos Algina Sociedad Ltda.	g, ...
	Compania Industrial de Algas del Pacifico Ltda.	g, ...
San Antonio:	Empresa Pesquera Harling Ltda.	a, b, j, d, *
	Compania Pesquera Arauco S.A.	a, b, d, e, f, j*
	Sociedad Pesquera San Antonio S.A.	a, b, d, ...
	Pesquera Kon Tiki Ltda.	d. ..... *
	Vitamar Ltda.	h. .....
Talcahuano:	Alimentos Marinos S.A.	a, b, c, d, f, j, *
	Antonio Colucchio e Hijo.	a, b, c, ... *
	Industria Pesquera Adria.	a, b, c, ... *
	Pesquera Landes S. A.	a, b, ... *
	Gomez y Vasquez Ltda.	a, b, ...
	Nicolas Queirolo y Cia Ltda.	a, b, c, ... *
	Italo Queirolo y Cia.	a, b, ... *
	Pesquera Iquique S.A.	a, b, c, e, f, .. *
	Sociedad Pesquera El Golfo Stengel y Cia. Ltda.	a, b, j, ... *
	Saelzer Hnos.	a, b, c, ... *
	Jorge Sarquis y Cia.	a, b, c, d, ... *
	Vasques y Cia. Ltda.	a, b, ...
	Jose San Miguel y Cia.	a, b, c, d, f, .. *
	Manuel Henriquez y Cia.	a, b, ...
	Lindor Sasvedra.	c
	Conservas Zabala S.A.	c
	Federico Schlack.	a, f, ... *
	Compania de Industrias Sudamericanas Ltda.	i, ... *
Tome:	Cia. Pesquera Camanchaca Ltda.	d. ..... *
Coronel:	Ricardo Ulriksen Petersen.	e, f, ...
Valdivia:	Empresa Pesquera Pedro de Valdivia.	a, b, d, e, f, .. *
	Sociedad Cooperativa Pesquera Valdivia Ltda.	e, f, j, d, ... *

Puerto Montt:	Pesquera Llanquihue S.A.	a,b,d,e,f,	*
Calbuco:	Ind. Pesquera Castrillon e Hijo Ltda.	c,	*
	Emp. Pesquera Conservera Corral	c,	*
	Antonio Villarroel y Cia.	c,	*
	Pesquera y Conservera Ditzel S.A.	c,	
	Ind. Pesquera Ditzel-Cabrera y Cia.	c,	*
	Fabrica de Conservas La Islena (ex Schmeisser y Cia)	c,	*
	Klenner Bercke	c,	
	Meschner y Soto Ltda.	c,	
	Industria Pesquera Parancan Hnos. e Hijos Ltda.	c,	*
	Ind. Pesquera Soto y Leniz	c,	*
	Conservas La Vega S.A.	c,d,	*
Rolecha:	Berger (ex Schweinewitz)	c	
Aulen:	Berger (ex Schweinewitz)	c	
Ancud:	Sociedad Pesquera Pacifico Sur Ltda.	c, d,	
Quellon:	Ind. Pesq. y Conservera Hauer y Rodriguez Ltda.	c	
	Soc. Pesquera Alfa	c	*
	Soc. Pesquera Chiloe Ltda.	c	*
	Industria Pesquera Onis (Jose Szigeti)	c	*
Castro:	Emp. Pesquera Mares de Chile Ltda.	c	*
Puerto Aguirre:	Schmidt Hnos.	c	*
	Soc. Comercial Vasquez Hnos.	c	
	Ind. Pesq. Carlos y Roberto Molina Soc. Ltda.	c	
Punta Arenas:	Conservas Centolla Magallanes	c	
	Sociedad Pesquera CAmelio e Hijos Ltda.	c,d,	
	Sociedad Industrial Pesquera MacLean y Cia.	e	
Porvenir:	Kovacic y Cia. Ltda.	c	
	Cia. Mario Gomez	c	
	Pesquera Magallanes Ltda.	c,d	
	Compania MacLean Ltda.	c	

CODE: a: fishmeal; b: fish oil; c: canned fish and/or shellfish; d: frozen fish and/or shellfish; e: dried and salted fish and shellfish; f: smoked fish; g: algae; h: derivatives of algae; i: whale meal and oil; j: fresh products; *: have their own trawlers. Source: Sociedad Pesquera.

Apart from anchoveta there is insufficient information to assess the magnitude of the potential of Chile's fisheries en general. Anchoveta

catches have fluctuated in recent years around a mean of some 900.000 tons, irrespective of fishing effort, and it is believed that further effort would not result in appreciable increase in the catches.

On the other hand, landings of demersal fisheries seem capable of further expansion. The total potential of all demersal species off Chile has been estimated, tentatively, as being of the order of some 500.000 tons. While hake (Merluccius gayi gayi), the most important demersal species landed at present, is probably fished to or near its maximum sustainable yield mark, other species of commercial interest might be capable of more intensive exploitation. This is particularly true of stocks detected in the south of merluza de cola (Macruronus magellanicus) and the southern hake (Merluccius polylepis), which because of their remoteness from the main centers of population and the very rough weather encountered in the area have so far been only lightly fished. Large stocks of Scombresosex have been detected and exploited by U.S.S.R. vessels in the northern region. Also squids represent an almost untouched resource in the central region, and so too species of the family Myctophidae. In the far southern waters a number of under-exploited pelagic fish of which the principal species, Clupea fuegensis, could probably have an annual yield of some 100.000 tons. Recent estimates made by Russian exploratory fishing efforts in the sub-Antarctic waters indicate that krill may be in quantities of some 200 million tons. The conclusion is obvious, there seems to exist in Chilean waters the resource base to develop further the fishing industry without

a radical alteration in the type and range of operations now undertaken, except in the case of krill, which apparently is also abundant within the south-eastern sector of the Pacific that is adjacent to Chile's coast.

However, extreme care should be exercised in relation with the exploitation of invertebrates of the littoral and sublittoral. Many of these species are supporting strong extractive pressures for very long time. The lack of scientific knowledge on their life histories makes it very difficult as yet to implement sound management measures.

In only very few countries fisheries contributes in any important measure to the economy. It is well known that the case of Iceland is exceptional. The total exports of 1969 show for this country that 81.8% is made up of fish products[13]. In Chile, where the fishery sector is under a strong trend of development, the present contribution of fisheries to the National Gross Product is of only 1.4%. Of this, about 0.4% is due to actual extracting fishing and 1% to industrial processing. The emphasis on exportation and obtention of hard currency has pushed Chilean fisheries to a position where it contributes with 3-4% of Chile's total value of exports. Although these figures fall extremely short from those of Iceland for example, taken in them in the right context, they are important, (see Table IX).

TABLE IX: Chile's exports of mining and manufactured products, (10^6 $).

	1969	1970	1971
A. Mining:			
Copper	925.5	867.9	752.5
Iron	70.9	71.0	69.0
Nitrates, I, SO_4	25.8	24.5	36.6
Other	19.2	19.5	21.7
Total	1.041.4	982.9	879.8
B. Manufacture:			
Processed copper	0.6	4.0	7.0
Semi-processed copper	6.6	8.5	7.3
Paper	8.4	9.5	9.0
Pulp	15.3	17.6	17.4
Paper board	4.0	5.0	5.7
Chemicals	7.3	5.8	11.2
Seafood products	23.6	24.0	39.5
(fish and shell-fish)	(18.1)	(15.0)	(6.7)
(fishmeal)			(29.2)
C. Other:			
Wood	7.7	9.1	6.6
Motor vehicles (parts & components)	9.4	9.6	4.5
Rolled iron and steel	-	1.5	6.8
Other	36.2	40.3	38.1
Total	104	114.7	135.2

Source: Economic Survey of Latin America, 1971 - UN Economic Commission for L.A., UN, N.Y. 1973.

In a recent analysis[14], of Chile's fishery management and development the following are considered to be the sector's main problems: (a) Planning: an example of the lack of planning is the crisis of 1965; (b) Coordination: many organisms participate in the fisheries activities without the necessary interrelation among them; (c) Research: basic knowledge of most resources is minimal and much more technological research is required; (d) Technical and Financial Assistance; (e) Marketing and

comsumption; (f) Infrastructure; (g) Fishery Education; (h) Conservation.

Up until December 1967, latest data available, the manpower of the fisheries sector of Chile comprised approximately 27.670 persons. Of this about 50% were artisanal fishermen spread all along the country[15]. The largest concentrations of artisanal fishermen are found around the Concepcion-Arauco and the Llanquihue-Chiloe (Archipelago region) areas, with about 5000 and 2500 fishermen respectively. Artisanal fishermen own some 6.000 boats with or without deck. About one third have engines. Artisanal fishermen are very important in the socio-economy of the fishery sector in that contribute with about 7% (90.000 tons) of the total catch in the form of fresh fish for immediate consumption. The revenues from this production benefit approximately some 100.000 persons[16].

The industrial fisheries, which includes the fleet's crews and the processing plant's complements, employs approximately 10.000 persons. Of these, a little over one half work in the edible food industry (canning and freezing), about one quarter in the reduction industry, one tenth in maintenance and one twentieth in the administration, research and teaching. The rest are crews on board the fishing fleet.

2.2. Shipping: Although scanty data is at hand on this subject, a few points can be made. It is common knowledge that at present the Chilean merchant marine fleet is insufficient, old and uncompetitive, even to transport cargo within Chile's jurisdictional waters. Most of Chile's cargo, there-

fore is transported by foreign flag vessels. In a recent statistic Chile does not appear among those countries with over 100.000 T.D.W. In another reference it appears with 120.000 tons of oil tanker capacity[17], (probably of Navy units).

All the Andean countries had in 1968 some 800.000 tons of G.R., a figure that represents 16.5 per cent of the total for Latin America. The whole of Latin America owns 2.7 per cent of the world tonnage (4.9 million tons)[18]. The following table gives an insight of the dependence of the Andean countries of South America in what shipping concerns (see Table X).

TABLE X: Maritime trade by the Andean countries, shipping costs for the year 1968 (in millions of dollars).

Countries	Importations			Exportations		
	Total cost	By Nat'l vessels	%	Total cost	By Nat'l vessels	%
Colombia	42.0	11.4	27	101.0	5.2	5
Chile	68.5	17.0	25	93.0	12.1	13
Ecuador	17.3	4.2	24	52.7	3.0	6
Peru	69.0	13.0	19	157.0	5.0	3
Total	196.8	45.6		403.7	25.3	

Source: CEPAL, 1968

The situation depicted in the above Table is one of deterioration as compared with previous years. In 1962 the total volume of exported cargo was of approximately 30.5 million tons for all four countries, of which each participated with 13, 15, 6 and 4 per cent of the total, respectively. In 1967, in spite of an increase of the total volume (41.5 million tons), the national participation was of only 6, 10, 9 and 4 per cent respectively.

As the value of this shipping was of about 600 million dollars, the countries involved are paying about 400 million dollars to foreign flag shipping[19].

Following the last years outcry on the problem, some efforts are being made in order to develop the Chilean merchant fleet, although the present balance of payment situation of the country does not allow for much investment at present.

Ports are also few and old fashioned. A modern port is under construction in San Vicente, Concepcion. Deep water ports are only possible in the northern region where continental shelf is practically non-existent. Data for a more detailed analysis of this item are lacking at present.

International shipping used to be quite intense along the Chilean coast before the establishment of the railroad accross the Panama Isthmus, and fell to extreme lows after the opening of the Panama Canal. By the middle of the 19th Century, in the heights of Chile's gone economic and political power in the South American continent, Chile gave William Wheelwright a concession "to ply Chile's waters with steamships". Wheelwright formed the Pacific Steamship Navigation Company, whose first two ships, the Chile and the Peru, left England in August, and passing through the Strait of Magellan, (a significant event in itself), anchored in Valparaiso in October 1840. This enterprise, supported with British capital, was the fruit of British interests in Chile and in their concern for transport and communications

between G. Britain, the entire west coast of South America, and the colonies in Oceania and the Far East. The Steamship Company, based in Valparaiso, was of the highest significance to the economic and commercial advance of Chile. It actually became closely identified with Chile's development[20].

It has been stated[21] that "the most immediate and dramatic impact of the Steamship Company was in its focusing attention on the Strait of Magellan". In 1843 Chile occupied the Strait by establishing Fort Bulnes near Punta Arenas and close to the site where the Spanish rulers had founded the famous Port Famine[22]. The Argentinian version of this issue can be read in Pelliza's work[23].

Intense trafic with California gives credibility to the idea that Chileans started the gold ruch of 1849. The fact is that thousands of miners left for California bringing with them the skills and some of their culture, still observable in California[24].

2.3. Sea power: This subject is at the basis of the history of independent Chile, facilitating as it did, the independence from Spain, later on by helping the settlement of boundary disputes and in modern times by making it safe to navigate in the Chilean seas, including Antarctica, where such illustrious and famous explorers as Shakleton and Cousteau, have reasons to thank the Chilean presence in that continent. On the west coast of South America, the role of sea power in the independence of those countries from the Spanish domination, is generally recognized[25]. The decline of the Spanish navy and merchant marine contributed directly to the loss of the

Spanish Empire. Spain could not maintain her authority over revolutionary and far away colonies without a powerful navy. Patriots, on the other hand, late, but not too late, saw the importance of having a naval squadron. This was formed in 1818 and much success under the leadership of the English sailor Lord Cochrane, who after several years of brilliant service to Chile was succeeded by the Connecticut born C.W. Wooster who, by winning the last foothold of the Spanish in Chiloe, 1826, drove Spain out of Chilean territory definitely[26].

The balance of power in South America was a real issue around the year 1830 when Chile had serious problems with the Peru-Bolivian Confederation. Chile, at last defeated this confederation and committed itself to a doctrine of equilibrium of power. Chile's strong postwar position is in large measure due to sea power, although its nave had been limited in its growth bor reasons of economy. The lack of naval strength in the neighboring countries, the skill of the Chilean seamen resulted in that the small Chilean sea power of the time actually established the country's power in the continent's Pacific waters" [27].

Territorial expansion and protection of guano resources of the north soon made Chile realize the necessity for a greater naval power. In 1844, the Ministry of War and Navy advised Congress that the country's long coastline made it particularly vulnerable to sea attack, and insisted in that for Chile,"the navy is its future". In its plea the Ministry demonstrated his clear understanding of the value of the sea for the country, a

value which has too often been forgotten in the past:

> "..if you cast a glance over the rest of the world and observe that the two most free and industrious nations are precisely those that possess the greatest naval forces, you will be tempted perhaps to study the intimate relationship between war and the merchant fleets, and between merchant fleets and the greatness of a people"[28].

In 1845 Congress authorized the addition to the Navy of a 900-ton steamship and the replacement of two existing small schooners with sailing vessels of 240 tons each. Congress, however, failed to appropriate sufficient funds to implement this authorization. In 1848 the commandant of the Chilean navy insisted in that "the steady enlargement of the Peruvian navy requires similar efforts on Chile's part....to maintain between the two states the peace that is so greatly desired"[29].

New appropriations by the Congress in 1863 were sufficient to acquire new vessels and prepared Chile against belligerency from Bolivia and Spain. The seizure of the Chincha Islands of Peru (rich in guano deposits) by Spain in 1864 made the Chilean government to declare that it would never recognize any but Peruvian sovereignty over them, and to initiate the purchase of four additional ships[30].

Cooperation between Chile and Peru on the basis of naval power against the reconquest activities of Spain soon ended and begun the setting of the stage for the conflict between Chile against Peru and Bolivia, the War of the Pacific, where naval power had an important role. Peru at the time had a slight superiority in naval power with the purchase of the

Huascar and the Independencia, two extremely powerful ironclads. In struggling for a stronger navy the Chilean Minister of war and navy expressed in the Chamber of Deputies the Chilean policy in the oceans as far as sea power was concerned:

> "Chile's honor and its interests demand taht it be represented upon the seas in a manner befitting its past history. It must not continue to play the fool, supporting only four insignificant ships in the Pacific....Chile possesses the legitimate right to expect that its flag - the most glorious flag of the republics of Spanish origin - will figure nobly in the Pacific, maintaining forever the country's superiority".

During the War of the Pacific the transithmian railroad accross Panama was also important for the belligerents in the transshipment of war materiel purchased in Europe. This route was especially important to Peru.

After the War of the Pacific and as an aswer to obvious facts of Chilean domestic and international life, great impulse to build up the sea power of Chile took place under the administration of President Balmaceda. He declared then:

> "In conformity with the plan for our future national security, I desire that Chileans be able to resist (the attack of) any possible coalition upon their territory, and that, if...they are not able to equal the maritime strength of the Great Powers, they may prove, upon a strong military base and with a navy in keeping with their wealth, that there is no possible profit in udertaking war against the Republic of Chile"[31].

Balmaceda's main interest, however, was the navy, and wanted to acquire war ships and fortify harbors. He also sought to reduce the nation's dependence on Europe and increase the efficiency of its naval operations by

constructing a modern dry dock (still in operations today and enlarged in the complex known as ASMAR) and port facilities at Talcahuano (1888). Balmaceda's naval program was a success in the Congress being overwhelmingly approved. The construction of the ships was begun in 1889 and the fortifications of the harbors of Valparaiso and Talcahuano was also underway at the same time. Balmaceda also gave a subsidy to the Compañia Sudamericana de Vapores in exchange for an increase in the fleet with vessels which could be used in times of war under the Chilean navy's control.

It should be added here that in 1874, under President Errazuriz the decree was signed that created the Hydrographic Institute of the Chilean Navy which is an important nucleus of marine oriented activities in the country today, at its one-hundred years anniversary[32].

The Chilean navy can be identified with much of Chile's interests in the oceans also in times of peace. Its relationship with the knowledge of Chile's basic oceanography, and even some applied fisheries biology are described by Sievers[33, 34]. This is not in disregard of the other technical activities for which it was basically created, that is hydrography and cartography. The navy is also the principal vehicle of communications and transport in the southern Archipelago Region. It provides for logistic support to all major scientific activities by civilians (Government or Universities) both in front of Chile's coasts and in the area of the Chilean Antarctic territory. The navy's social work includes the efforts made by one unit in bringing medical attention to the isolated and remote populations of the

many islands of the southern archipelago.

Although limited by scanty resources, the Navy has kept continuous sovereignty in the Chilean seas and has provided with effective, albeit, limited, enforcement of municipal and international legal bodies.

Only six infractions to the 200-mile Maritime Zone have been recorded, as compared to 122 and 53 for Ecuador and Peru, respectively, since the implementation of the agreement in 1952 till 1972. Due to the limitations of surveillance these numbers probably are only a fraction of the real number. As for fines applied in connection with these infractions, the information is summarized in the following table (see Table XI).

TABLE XI: Fines applied to infractions of the Maritime Zone by the Permanent Commission of the South Pacific (CEP) between 1952 and 1972 (in US$).

Flag	Chile	Ecuador	Peru	Total
Canada	-	67.292.00	-	67.292.00
U.S.A.	6.000	2.707.518.80	181.324.00	2.894.842.00
Japan	-	151.983.04	11.000.00	162.983.04
Panama	-	23.600.00	3.000.000.00	3.023.600.00
Total	6.000	2.950.393.84	3.192.324.00	6.148.717.84

Source: Comision Permanente del Pacifico Sur, CEP. Infracciones en la Zona Maritima del Pacifico Sur, Secretaria General, Quito, Enero, 1972.

Finally, ti should be enphasized that better means of surveillance should be developed, besides the implementation of the Navy's capability in order to protect marine resources of Chile's economic zone. Unconfirmed rumors have been publicized on the presence of complete fleets of foreign flag vessels exploiting whales and tuna both off the continent of Chile and off the Easter Island.

2.4. Off-shore oil: Chile produces at present about 30 per cent of its oil needs[35], being all exploited inland in the southernmost province of the country, Magallanes (Tierra del Fuego). The complementary oil comes from the Middle East (40 per cent) and the rest from the South American Oil producers (Venezuela, Ecuador and Bolivia).

Chile's total production, of crude petroleum products in 1967 was of 1.966.000 m^3 and that of gas of 6.653.000 m^3. Chile's total energy consumption in 1966 was as observed in Table XII.

TABLE XII: Total energy produced and consumed by Chile in 1966, in thousands of tons of 10.700 Kcal. (Kg. petroleum equivalent).

	Produced	Consumed
Coal	950	1.160
Crude oil	1.620	3.472
Natural gas	5.788	500
Hydroelectri power	1.285	1.092
Vegetal and other fuels	970	970
Total	10.613	7.194

Source: Economic Bulletin for Latin America, 1970, vol. XV(2):11.

Off-shore exploratory drillings, plus aeromagnetic and seismic surveys have been performed since 1970 in the continental shelf between Chanco (35°45'S) and Corral (39°55'S) by the National Petroleum Enterprise (Empresa Nacional de Petroleo, ENAP). The results of these are soon to be published[36]. The fact is however that no oil deposits have been found yet, although rich gas reserves have been disclosed in this area. More recently and with the collaboration of the R/V Melville of the Scripps Institution of Oceanography (1972) and the R/V Yaquina of the Oregon State University

(1973-74) the geophysical survey has been extended down to Chiloe in the Archipelago Region.

Natural gas reserves are known since some time in explorations performed on the shores and seabed (50 m depth) of the Magellan Strait. These reserves are estimated to be of about 80.000.000.000 m^3 and 30.000.000.000 m^3 respectively. Plans are being made to start exploitation of these resources in the near future. This could be the first offshore fossil fuel exploitation installation in Chile. So far it appears that in the comparatively broad shelf of the Central Region, no oil is to be found. Since the middle of last century date the exploitation under the shelf of rich coal deposits in the province of Concepcion (Lota and Coronel). This land operated mining was mentioned as part of Chile's interest in the oceans at the time of the President Gabriel Gonzalez Videla Declaration on the 200 mile jurisdictional claim in June 23, 1947. Fisheries at the time had an extremely low impact in Chile's economy.

2.5. Marine recreation and extension facilities: Chile's perception of the use of sea resources for recreation is very undeveloped. Some summer resorts exist and good beaches, although not very abundant in the lenth of the country, are reasonably accessible to the most populated centers. Facilities in these cases are minimal. As mobility of people and the taste of life in the open increases a big stress is being put upon some of the natural resources of the coastal zone.

Municipal jurisdiction of the beaches in Chile falls upon the Direccion del Litoral y Marine Mercante (Law of July 25, 1953). Beaches are

considered public and access to them must be secured by private owners of adjacent land. The extension upland is till the limits of the highest tides[37]. However, no major legal instrument exists yet to protect, enhance and promote the quality of these resources. Boating and yachting are of little importance in the general contect of the country and are at present accessible only to a very small portion of the wealthier people. Sport fishing is also negligible altough anglers have increased in the last years, creating a demand for fishing equipment and live bai in some areas of the country. In some parts of the central region of the country species of the genus Callianassa are used, in one instance, an undescribed species is involved. In the area of Lenga, Concepcion, large populations of this animal have been wiped out by the liquid industrial wastes of the petrochemical complex. This is one of the several effects of this pollution in the spot.

At several instances the idea that the Chilean marine fauna and flora, and its ecosystem should be the theme of an educational public aquarium, has come up. At present only small experimental aquaria exist in some of the marine laboratories of the Universities. The idea has even been expressed for Easter Island, where a constant flow of world tourists could make it a profitable business. The Municipality of Viña del Mar has been probably the closest to the realization of the project[38].

Recent plans by the University of Concepcion include the construction of a public aquarium near Concepcion. These facilities are of extreme importance in the extension efforts of a country or region in reference to

the sea life and should be pursued until materialization.

In summary this item does not really involve any major investment so far in Chile, although some trens toward a better use of the seas for recreation and extension purposes could be detected.

2.6. Pollution control units: These are inexistent at present although the problem of pollution does obtain degrees that justify alarm in certain areas of the country. Many of the industris have chosen the coastal zone for their installation and to dump their wastes and industrial waters. It is well known that in this zone are some of the most long-term valuable resources of any country, which because of their living or ecological condition, must treated as non-renewable resources (at least as far as the most natural and desirable qualities they present). It is so far fortunate that Chilean population impinges on the coastal zone in a low measure, although concentrated in a few spots where critical environmental conflicts can already be detected. The two areas most affected in this sense are the one around Valparaiso and especially the area around Concepcion. The latter, which also known as the Bio-Bio River Basin Region, with about 1.7 million people[39], already harbors an oil refinery, a petrochemical complex, and steel and iron mill, several textile factories, pulp and paper industries, fertilizer plant, a thermo-electrical plant, a porcelain and a glass industry, several fish processing industries, several lumber processing plants and under the shelf coal mining. Domestic wastes, solid and liquid, reach the coastal sea without treatment and in gneral there is a use and abuse of the environment which is hardly

acceptable by any standards, but which is difficult to cope with due to several problems, some of which are typical of developing countries. One of the most dangerous pollutants which may be arriving to the marine ecosystem at present is mercury from the catalytical cells used in the production of polymers of the plastic industry. The National Health Service has the legal instruments and responsibility to cope with this problem, although it lacks the technical capabilities. It is an observed fact that certain technologies arrive faster to our developing countries than those which tend to counteract the illl effects of the first.

The area of Concepcion, or the Bio-Bio Rio River Basin Region, is an area which could yield rewarding results as a subject of an international effort toward the integral study of the control and abatement of pollution, and in the devicing and testing of coastal zone management principles as especially designed for a developing country. It is a problem far too complex and expensive to be coped with solely by the affected state. Universities should be the bases of such a project, where human resources are formed and knowhow is already advanced. As stated previously, local legislation and government organisms that are related with this problems are inadequate. The latter lack the personnel, financials, and adequate training and knowledge to faci it effectively. Besides, priorities distract full attention from the authorities into more present and immediate health problems, such as diseases, malnutrition, etc.

Technology arrives faster to Chile than the realization of its bad

effects. In fact few people looks into or care too much for these bad effects since all the national attention is focused on the elevation of the standard of living. I would be a virtual heresy in a developing country such as Chile to crusade against industrialization (it is so even in a developed country such as the U.S.!). This does not justify of course silence on the part of the Chilean environmentalists. It is a source of optimism the fact that in recent months the process of industrialization, which has been indiscriminate and oriented to produce practically every single consumption item at very high costs and unable to profit of economies of scale due to the small market in the country, is under scrutiny and criticism. A major adjustment must be performed, especially in the face of the agreements of the Andean common market, to be open in 1980.

It should be hoped then that future adjustment policies will introduce modern experience and knowledge in the allocation of natural features of the coastal zone and other parts of the country to serve a largest possible range of people and uses.

There is an increasing threat of oil pollution from large tankers cruising along the Chilean coast, carrying Bolivian or Ecuadorian oil to other parts of the world. The southern region, besides being an area of great production potential it is one of conservation and presermation. But from the navigation point of view is dangerous for its constant bad weather which has grounded many ships throughout the history of navigation. Just a few months ago a foreign flag tanker split against the coast of I. Guamblin

spilling some 30.000 tons of crude oil (Napier case) which threatened areas of mussel and oyster culture. Effects of the spill should be observed. This incident made Chile realize that there is at present no possibility of coping with an event of this nature. Depending on the distance from the coast, the latitude and prevailing winds, the contents of a spill along the coast of Chile could be transported onshore or offshore. In the case of the Napier, which stranded at 45°S, the oil was pushed onshore. Basic knowledge of the behaviour of the surface water masses is important in the prediction of the movements of the spills and in the establishment of appropriate sea lanes of transit to tankers, which are getting larger and more dangerous to the environment everytime. Especial care should be enforced in the internal waters of the Archipelago Region against any dumping in those waters dut to its importance for aquiculture at present and its future potencial. Besides, preliminary information tends to suggest that the southern glaciated channels and bays may be in an active process of repopulation after the relatively recent glaciation of the region[40].

2.7. Historic usage: This is another form of investment which involves people that has built up traditions of certain associations with the sea, and pass the traditions on to relatives and friends. As mentioned above some of the coastal native trives were quite dependent from the seas in Chile, perhaps none so much as those from the inhospitable Archipelago Region[41]. There exists abundant evidence that these populations subsisted almost exclusively on shell-fish, fish and sea birds. Køkkenmøddinger or kitchen middens are abundant in those areas, as well as in many other locations of

the Chilean and Peruvian coast. These are the potential material for interesting studies into anthropological and ecological studies of the past. In modern times it is estimated that there are about 15.000 artisanal fishermen along the country operating from and living in about 188 fishing villages[42]. Of these fishermen about 3.000 are affiliated with the nearly fifty cooperatives of the country. The Ministry of Agriculture, through its Instituto de Desarrollo Agropecuario (INDAP) has had a vast program to upgrade the different aspects of the peasants and artisanal fishermen of the country. This paternalistic program has had dubious results so far. Few have realized that the key to the success in this field is not so much to think and decide for the fishermen as to work with the fishermen. Anthropological and sociological studies should be encouraged in order to reach an undertanding that differs from that mostly attempted until now which is mostly of political connotations. The degree of identity of these social groups and the elaboration of their traditions and associations with the sea are difficult to define without the proper scientific investigations, but they are probably low and little developed as compared with equivalent fishing communities of countries in Europe and Asia or Africa. At any rate their importance can hardly be underestimated for Chile. Anthropological ties to the ocean, whatever their absolute value, have an immense relative value especially where perceptions tend to suggest a larger and more developed dependence from the sea. This development will probably be more successful on the basis of preexistent marine populations than displaced groups from other activities such as mining.

It is generally recognized that the highest degree of seamanship is found among the Chilotes (people of the Chiloe province in the Archipelago Region) who are excellent fishermen and use the sea as the most natural element for all their activities, cultural, commercial.

Artisanal fishermen have modernized in the recent years by mechanizing to a certain measure and innovating. The introduction of SCUBA diving is one of these innovations, useful in the exploitation of the several forms of invertebrates and algae that make the bulk of their catch. These fishermen have now a tremendous exploitation capacity within a highly unregulated system. Rules and enforcement are badly needed in order to prevent not only the depletion of the stocks but also the many accidents that happen due to the misuse of the diving techniques.

Historic usage is at the base of the South American countries' extended patrimonial sea claim, the concept of the "biome", that is the relationship between man and its natural environment, in this case the sea, its physico-chemical characteristics, its biology and the natural populations on which men depends. It appears that with respect to the oceans this was the first application of ecological principles to form the bases of national policy. The body of thought and literature developed on this idea has taken in the world and is at the bottom of the possible acceptance of a 200-mile economic zone international law of the sea principle in the coming Conference of Caracas.

2.8. Conservation: As economist view it, "conservation of one or of all

resources is seen to be an allocation of resources, by individuals and states, away from the maximizing of those ends now served in favour of the prolongation of the services of particular resources"[43]. In spite of expressed perception on the importance of conservation and protection of sea resources, Chile has done little to enforce and implement these intentions. A true conflict has been felt between the irresponsible tendencies towards an indiscrimate development making a trigger of the law and on the other hand making of the law an instrument for a better and more balanced development of marine affairs. This is the case of fisheries in Chile, and the experiences of the anchoveta fishery in the northern region by the middle of the decade of the 60's is good example of this statement.

The idea that some measure of conservation should be exercised on exhaustive resources in the sea dates from the year 1832. The notable publicist Andres Bello wrote then[44]:

> "There are many marine productions which are circunscertain surroundings... and no matter how big the fecundity of nature on other species, it cannot be doubted that the concurrence of many nations would render it more difficult and less fruitful to fish them and would finally extinguish them...Being, thus not inexaustive, it would seem licit for a nation to appropriate itself of the regions where they are found and which are at present not possessed by others".

Nevertheless the Civil Code (1857) is liberal with respect to fishing and states that both Chileans as well as foreigners established in Chile, may fish "freely" in the territorial sea. The first law of fishing (DFL. 34 of 1931) is affected by this criterium and in a very weak approach tries

to give the State some intervention in the exercise of the fishing rights of individuals[45]. The problem of freedom of fishing and the need to protect and conserve the natural resources is an important problem of Chile's marine affairs of today. With respect to marine mammals the first law that affected them was passed in July 1st, 1929 (Law N° 4601)[46]. Oysters have been protected by several instruments, the regulations of the Fishing Law approved by the Decree N°1584 of April 30, 1934[47], which is the most complete of the earlier legislation on the general subject, and by several other instruments; Decree N°181 of March 31, 1954, N°340 of April 25, 1961, N°147 of April 2, 1964, D. N°291 of June 4, 1964, which prohibit the extraction of this mollusc from certain areas of the Archipelago Region until 1964. There is some legislation pertaining algae (D. N°762 of July 1st, 1950, D. N°790 of Sept. 7, 1961 (on Gracilaria). Regulations of the trawling activities dates from April 9, 1961 (D. N°469, D. N°1492 of October 9, 1952, D. N°662 of October 2, 1953). Hake, one of the most important species of freshly consumed fish in Chile (Merluccius gayi gayi) has been conserved from indiscriminate fishing for reduction to fish meal, by the Decree N°760 of August 29, 1961.

Decree N°445 of March 26, 1953, forbids sale of fish offshore and does allow it only onshore. Further legislation regulated the instalation and operation of the establishments dedicated to aquiculture (D. N°619 of Oct. 1967)[48].

Recent legislation is concerned with the conflicts which have originated between the artisanal and commercial fishermen. It sets limits

to the proximity from shore that trawlers may operate (D. N°27 of Jan. 12, 1971, D. N°119 of March 22, 1971). The establishment of new fishing industries is regulated in 1970 (D. N°163 of May 15, 1970, which modifies D. N° 524 of 1964). This instrument is concerned with the problems of overdimensioning of catching and the processing industry and the fluctuations of the abundance in fishing resources and applies measures toward the indiscriminate and unauthorized operation or enlargement of operations on the part of the fishing industry.

Further recent conflicts in the Gulf of Arauco between the artisanal and industrial fishermen prompt the D. N°177 of May 25, 1971, which prohibits altogether trawling operations in the Gulf.

The large mussels (Choromytilus chorus) have been protected from extintion by applying D. N°271 of Aug. 24, 1971. Scallops (Pecten purpuratus), also under danger of overexploitation have been fully protected by D. N°275 of Aug. 30, 1971. King crab (Paralithodes antarctica) has been the subject of limited legislation too (D. N°349 of Nov. 16, 1971).

With respect to the main fish species of the Chilean industrial fisheries, anchovy, Decree N°118 of March 4, 1966, prohibits the "extraction, sale, purchase, transport and possession" of anchoveta less than 12 cm long (but allows 20% tolerance in the catch)[49].

A recent analysis of Chilean fisheries legislation, however, states:

"...even though freedom of fishing has been in theory restricted, the norms of protection are not important or actually practicable"...[50]

The above list of decrees is just a sample of the total Chilean legislation on fisheries. More complete information can be obtained by addressing to the bibliography list. Supranationally the country has engaged in several legal bodies within the CEP. The regulation of whale hunting is worth mentioning[51].

One of the most serious factors affecting conservation measures in Chile is the lack of a scientific base to it. Most resources are exploited with serious lack of knowledge of their biological and fishery biology variables. A few are somewhat understood but the large majority is virtually unknown.

Towards the study of natural resources in general and those of the sea, in particular, two laws have been most decisive: N°11575 and N° 16425. The first of this laws also helped financing the Council of Rectors of Chilean Universities the organization under whose auspices the Commission for Marine Science and Technology functioned. Funds were, however, soon deviated to cover wedges and salary readjustments. The second law, denominated Copper Law, because it contains important modifications to the Law 11828 on the copper mining, destined 2 per cent of the fiscal participation on the revenues from the copper extractive industries, to research, development and utilization of the marine, fluvial and lacustrine resources. These funds, which were passed over to the Corporation of Development, were admin-

inistered by a especial comision (Commission for the Research, Development and Utilization of the Marine Resources - CIFARM), made up by members of the Executive Council of the Fishery Development Institute. The law financed primarily the activities of the Fishery Development Institute, a government Institute created jointly with FAO, some of the activities of the Hydrographic Institute of the Chilean Navy and marine and continental water research of the Chilean universities.

2.9. Preservation: Only a small number of measures exist to preserve given natural resources of the sea and the coastal zone. These in turn are not fully supported by basic knowledge, being for the most part only approximations or educated guesses at best. As a result there are already important natural resources that have probably been irreversibly altered and perhaps lost to their best advantage by the community. The value of the immediate intact preservation of selected natural land and water areas in shoreline and estuary regions of the country due to their extremely unique ecological character, is still imperfectly realized. The protection from environmental degradation of those coastal wetlands and estuaries that are highly productive habitats, spawning areas, or nurseries for aquatic life or contain rare and endangered species is still a subject without much impact in the Chilean set up. The monitoring of activities in the coastal zone not only for their effect upon the near-shore waters, but upon the seas and the oceans, is even farther from the minds of Chilean officials. The legislation in this respect is inadequate and more so the enforcement to whatever exist in the way of norms and standards. One example is the Law N° 17288 on National Monuments.

This law contains a title on the Conservation of Environmental Characters and on Santuaries of Nature and Scientific Research. On one hand the law protects certain qualities of the environment for the common enjoyment and/or the benefit of science, but on the other hand limits the freedom of scientific research (even of Chilean scientists) by requiring from them to deposit the type material in the National Museum of Natural History at Santiago, which is well known for its lack of resources in the task of keeping collections in good shape. At present time a large number of Chilean scientists are outlaws by not observing this legal body for the reasons given. One possible solution to this problem is the study of the establishment of a Sorting Center attached to the Museum and within a program of development which will transform it in an active institution with curatorial and research capability, much needed in the country, where the basic knowledge of its faunistic and floristic natural resources as well as the geolocal ones is still so imperfect. On the other end a development such as this will absorve the universities' output of trained researchers.

2.10. Aquiculture facilities: In spite that Chile, both through private and Government initiative, was one of the first Latin American countries to establish aquiculture facilities, both in fresh inland and sea waters, the progress and degree of technological sophistication of this activity does not make justice to the time and effort involved since their beginning. Most of the marine aquiculture facilities are located in the southern Archipelago Region, although some raft experimental units are found in the northern and central-south region. Until 1964 the culture activities were

based almost exclusively on empirical knowledge, resulting from a long process of trial and error and without the necessary training from the part of the operators as to assure the correct interpretation of phenomena. Since then these efforts became based on scientific research[52]. A recent survey of the present situation on the subject[53], establishes that still the basic defect of this item is the lack of basic knowledge about the species involved. The following are the main species: Choromytilus chorus (choro), Mytilus edulis (quilmajue), Aulacomya ater (cholga), Semimytilus algosus (chorito negro), Ostrea chilensis (ostra).

Decisive research was being performed in the Marine Laboratory of the University of Chile, Valparaiso, (Montemar), on the life history of Loxechinus albus (erizo) the valuable sea-urchin, species under extremely high exploitation. Scientists involved in these studies believe that in order to solve many of the unknown problems in relation to aquiculture, a especial controlled habitat laboratory is required and this project has some priority in the present planification of the Fishery Development Institute.

To finish up this point in the light of the scanty material at hand, it should be noted that Chile's perception of the importance of aquiculture is highly developed and this is probably good if it is considered that the massive, defectuously restricted exploitation of many invertebrates along the littoral of Chile has exterminated some species from large areas and is diminishing the stocks in others. Scientific research is required about this particular problem in order to support realistic, scientifically based and

enforceable legislation. There are two immediate concerns to face about aquiculture activities and the management of existing stocks of actual and potential species for cultivation and these are the problem of pollution near the cultivation units and the coastal seas of Chile in general, for that matter, and the impact of SCUBA diving as a means to exploit, in a commercial scale the marine invertebrates of commercial value. In certain contries this practice is banned altogether.

3. Dependence: First a review of what the base work has to say about this point is in order[54]. According to Alexander dependence is what follows:

> Dependence is the third component of the national marine interest.It can be measured, for example, in terms of the proportion of the GNP which derives from marine-related activities, or of the proportion of the labor force engaged in these activities. Actually, whether calculated in either of these terms, there are very few countries of the world which are heavily dependent on the sea. Iceland and the Faroes are major exceptions. Although some countries derive considerable revenue from marine-related operations (which operations, in turn, employ a fair number of workers) it develops in most cases that there are many other forms of economic activity which, taken together, over-shadow the significance of the sea-related enterprises. Countries which make very considerable use of the sea, in addition to many other forms of economic activity, include Japan, the Soviet Union, the United States, and the United Kingdom. None of these are, as part of the national economic structure, really "dependent" on the sea.
>
> Some of the smaller island States and territories are at least indirectly dependent, or in a position to be so-not so much because of the traditional occupations such as fishing or shipping, but because of growing recreational complexes along the seashore, or of oceanographic laboratories or marine technology complexes. Among such places would be the Bahamas, Bermuda, some of the Caribbean Islands, and in time, perhaps, Micronesia. With little

> economic development in agriculture, industry or mining, islands and island groups may increasingly develop their marine-oriented activities; as independent States they may in time rank with Iceland in terms of dependence on the sea.
>
> But there are other types of dependence on the sea. A State may need the sea for transportation of its exports and imports, to fulfill its protein requirements, or-in the case of multi-island countries-for surface communications among its component parts. For some countries dependence may be a regional rather than a national phenomenon. Northwestern Norway and the Maritime Provinces of Canada are cases where there is strong dependence on the sea for one geographic region of the country. In such instances the antional government may adopt a policy of supporting the special insterests of these regions; however, in other situations, such as that of the United States, the dependence on the sea of such areas as Alaska and eastern New England are not strongly reflected in government policies, due in part to the conflicting interests of other groups in the country. As part of the national marine interest complex of States it is instructive to note the factors of both marine dependence and of investment in specific geographic sectors of the country, and to identify supporting or opposing forces which might affect the active support of these interests by the national government.
>
> One of the more frequent expressions of dependence are the claims of countries to special legal treatment.

In order to ascertain in some measure the degree of dependence of Chile from the sea, it is necessary to define some general indicators. As we have already pointed out the country extends for about 38° of latitude, its broadest areas are only 224 miles wide in the north near Antofagasta and 263 miles wide in the south near Punta Arenas. The area of the country is of about 286.400 square miles and its population of over 10.000.000 in 1972, growing at the rate of 2.3 per cent per year. Almost 37 per cent of the population lives in the Santiago Province (3.7 million). Of this, over

2.6 million are in the greater Santiago area. Some 1.7 million live in the Bio-Bio River Basin, and 1 million in Valparaiso and the Aconcagua Valley. Most of the people in Chile are urban dwellers. While in 1940 the rural and urban populations were about equal; in 1960, the proportion was 32 per cent rural and 68 per cent urban. The latest census (1970) indicates a continued shift, with 26 per cent rural and 74 per cent urban[55].

Chile's GNP was in 1970 of U.S.$ 7.355.000.000. This figure is made up of services (43%), industry (29%), mining (11%), agriculture (7%), construction (4%), transport and communications (4%), electricity, gas and water (2%)[56]. Chile was one of the first Latin American republics to achieve political stability after independence. The development of its mineral resources, first of nitrates, then of copper, gave it a position in South America's trade inferior only to Argentina and Brazil. Then came manufacture. Continuous inflation since the 30' - due basically to slow growth in agriculture. The output of the basic food stuffs failed to keep pace with the growth of the population over the past 30 years, prices inevitably rose, even with a policy of subsidizing imports and attemps a price control. Goverment revenues used to be largely dependent on foreign trade and particularly on the taxation of the large copper-mining companies. As pointed out previously the industrial development of Chile is largely due to the Development Corporation agencies founded in 1939, a government agency, one of the first Latin American development banks. Agriculture is certainly the weakest sector of the Chilean economy, in relation to its importance to the country, due to a feudal outlook in the countryside and inefficient methods

of many of the owners of the large states. Since 1942 Chile has become a net importer instead of a net exporter of agricultural products. Copper is the most important exportation item with about 700.000 tons per year. Salpeter has been down for more than 30 years but due to the increase in the demand of fertilizers and the higher prices,due to energy higher prices, of synthetic nitrate this industry in Chile is at the verge of another boom of salpeter. Reports indicate that at present supply cannot meet the demand and will take much investment and time to implement extractive machinery[57].

The sharp increase of food stuff importation, especially in the last two or three years because of the failure of the goverment's policies in this and other areas, has prompted the country to take drastic measures. The government has spent millions of dollars in an inventory of the food-producing resources. The aerial and field surveys undertaken between 1961 and 1963, produced detailed land-capability maps which were published by CORFO for the entire national core area. These show that 6.9 million acres of arable land extend in the region between the Aconcagua Valley and Puerto Montt with only 1.2 million acres of good to excellent farmland. Comparing population-distribution maps with land-capability maps, it is seen that most of the highly productive soils (75 per cent) are already densely populated north of the thirty-sixth parallel, and that some lands especially in the Coast Range, are overpopulated to the point of creating serious soil erosion. South of the 36°S parallel, soils of high capability are less densily occupied. This situation points out to the necessity of finding better ways of land

management and tenure and increase the productivity. In 1963 Congress passed the first agrarian reform law and established the Chilean Agrarian Reform Corporation (CORA). In 1967 President Frei inaugurated a second agrarian reform law to prevent what the characterized as:

> "...the concentration of land in a few hands, and inadequate and insufficient use of land resources, the monopolization of credit and other services by the few, and a paternalistic labor system which tended to abuse the peasant and prevented the development of a vigorous rural middle class"58.

According to Mac Phail[59], at that time, there were 185 thousands landless families out of a total of 345 thousands working rural families in Chile. The 160 thousands land-owing families (78 per cent) owned only 5 per cent of the agricultural land. On the other hand, 2 per cent of the total farms, each with more than 2.470 acres, comprised 69 per cent of the land.

The project for a third agrarian reform presented by Allende's government did not obtain a majority in the Congress, nevertheless expropriations within and without the norms of the existing law continued. Present Military Junta is said to be undoing some of the unlawful expropriations.

In the following pages some of the most important indicators of the economy of Chile will be examined, (see Table XIII).

TABLE XIII: Chile's gross domestic product at factor cost, by sector of of economic activity, (in millions of Escudos of 1960).

	1965	1970	1971
Agriculture	501.1	566.1	600.1
Mining	480.0	612.3	647.2
Manufacture	1.245.6	1.463.6	1.640.7
Construction	236.8	253.4	284.3
Subtotal (Goods)	2.463.5	2.895.4	3.172.3
Electricity, gas, water	62.2	83.0	
Transport and communications	519.3	623.9	
Subtoral (basic services	588.5	706.9	2.919.9
Commerce and finance	799.7	1.097.3	
Ownership of dwellings	255.3	273.5	
Miscel. services	565.3	625.9	
Govt.	240.2	268.5	280.9
Subtotal (other services	2.449.0	2.972.1	3.200.8
Grand Total	4.813.9	5.783.3	6.274.9

Source: Economic survey of Latin America, 1971, U.N. Economic Commission for Latin America, U.N., N.Y. 1973.

The labor force situation for the years 1970 and 1971 are shown in Table XIV.

TABLE XIV: Chile's labor force situation for the years 1970 and 1971 (1000)

	1970	1971
Labor force	3.189,2	3.278.0
Employed population	2.994.2	3.140.4
Unemployed population	195.0	137.7

Source: Economic survey of Latin America, 1971, U.N. Economic Commission for Latin America, U.N., N.Y. 1973.

In 1970 the total GNP of the country was of $ 7.355.000.000, this means that the gross value of fishery exports in the same year reached a figure of 0.53 per cent of the total GNP and 3.8 per cent of the total value of exports.

The labor force occupied in fisheries makes up 0.85 per cent of the total labor force of the country.

The lack of figures on other ocean-oriented activities is serious at the present time but will be corrected in the future when the problems of accessibility to the data are lessened.

At any rate, it is seen from the above that as far as fisheries is concerned this activity, although growing it is still of a minor importance in the total economic structure of the country. On the other hand it is not unimportant to enphasize the more than substancial rate of growth, which, as long as present catches of anchovy do not decline, could possibly become

several times more important in the future. It is doubtful however whether it will ever be so important as mining or agriculture or other activities which may develop in the future.

Some of the facets connected with shipping, for example, have already been examined. The large volumes of exports that Chile has to offer to the foreign markets makes it a point of the highest priority to solve the dependence on foreign flag vessels together with the rest of the Andean countries.

If the question of claims in the arena of international law are examined, it is possible to observe a rich material. Ideas developed in Chile and the CEP countries are having world impact today. Ideas that seemed and still appear to some publicists, extravagant and ridiculous, have gained a tremendous prestige and are serving as banners of economic independence to the developing countries. The recent dramatic realization of the value of the natural resources in a world of increasing population, decreasing resources and increasing deterioration of the quality of the environment, resources are not only extremely vital but industrialization, growth and economic progress are being put under close critical scrutiny by the developing countries.

Chile was the first country to claim special legal treatment on the basis of dependence from the sea (for the most part perceived) and declare sovereignty over 200 miles of adjacent sea, including the sea around

the Chilean Antarctic Territory. Within this claim the seabed and the subsoil were included for the purposes of economical utilization and conservation (economic zone or patrimonial sea). This claim has its roots in the famous Truman 1945 Proclamation of control and jurisdiction over the continental shelf, without depth of distance limit from the coast, and over the fishery resources off the U.S. coasts.

Chile also succeeded in obtaining support from neighboring countries on the 200-mile doctrine and in 1952 signed together with Ecuador and Peru the well-known Santiago Declaration which has placed these three countries together in a concerted protection of their natural marine resources.

The CEP (Chile-Ecuador-Peru system) has in operation a Permanent Commission which is charged with monitoring and perfecting the agreements of the system. Meetings are held regularly and these help to clarify and strenghthen the Latin American countries' law of the sea. The 200-mile claim is today supported by at least 10 countries in Latin America[60]. In accordance with these claims and other instruments of international law recognized by Chile, it is not a signatory State of any of the Geneva Conventions. The Inter-American system, in fact, particularly between the years 1950 and 1956, was structured around a set of principles and norms on Law of the Sea which case of progressive development of the law of the sea of regional characters. These principles and norms, which met strong criticism and opposition from many quarters has had and it is having still a trementous influence in the shaping of the world law of the sea. The concern of the Inter-American

system for the law of the sea affairs begun with the foundation of the Inter-American Council of Jurists, which was established by the Ninth International Conference of American States, held in Bogota in the Spring of 1948, to serve "as an advisory body on juridical matters; to promote the development and codification of public and private international law; and to study the possibility of attaining uniformity in the legislation of the various American countries, in so far as it might appear desirable"[61]. The Council's first dealing with law of the sea matters took place in Rio de Janeiro (22 May-15 June 1950) in its First Meeting. The theme "Territorial Sea Regime and Related Matters" was discussed and passed over to the Inter-American Jurists Committee for study. The latter on the basis of this task elaborated a report entitled "Project of Convention on the Question of Territorial Sea and Related Matters". This was the subject of a detailed analysis during the Second Meeting of the Council held in Buenos Aires from April 20 to May 9, 1953. The project contained dispositions that recognized the coastal state exclusive sovereignty over the seabed and sub-soil, waters and aerial and stratospheric space over its continental shelf (Art. 1); it recognized too the right to the signatory States to define a protection zone of control and utilization of economic resources to a distance of 200 miles measured from the line of lowest tides of their coasts and insular posessions (Art. 3). The attitude of the Meeting was rather cautious and abstained in formulating recommendations or declarations of substance.

The Tenth Inter-American Conference, held in Caracas in 1954, when dealing with the subject "Preservation of the natural resources: Continental

Shelf and Sea Waters" adopted a resolution (R. LXXXIV),which although still quite conservative, it contains a paragraph which is of great importance to the extension of maritime jurisdiction that had been performed by certain Latin American States. The paragraph reafirmed:

> "The interest of the American States in the declarations or legal actions to proclaim sovereignty, jurisdiction, control or rights of exploitation or surveillance to certain distance from the coast, as well as over the continental shelf and the overlying waters and the richess of nature that might exist therein".

In the same way the resolution reafirmed the principle that:

> "The coastal States have a vital interest in the adoption of legal, administrative and technical measures in order to conserve and prudently utilize the natural resources that exist or might be discovered in the said zones, to its own benefit, that of the Continent, and the community of nations".

It has been stated that the most important contribution of the Inter-American system to the progressive development of the international law of the sea, it is constituted by the "Principles of Mexico on the Legal Regime of the Sea" adopted by the Resolution XIII of the Third Meeting of the Inter-American Council of Jurists, held in Mexico City, from January 17 to February 4, 1956. In this meeting it is recognized that:

> "the extension of three miles to delimit the territorial sea is insufficient and it does not constitute a general norm of International Law. Therefore it is justified to extend the said zone traditionally called territorial sea",

and that:

> "Each State has competence to define its territorial sea to reasonable limits, paying attention to geographical, geological, and biological factors, as well as the economic needs of its populationm and its security and defense".

In relation to the Conservation of living resources of the high seas the Resolution states in its part C:

> "1. Coastal States have the right to adopt, in accordance with scientific and technical principles, measures of conservation and supervision necessary for the protection of the living resources of the sea contiguous to their coasts, beyong territorial waters. Measures taken by a coastal State in such case shall not prejudice rights derived from international agreements to which it is a party, nor shall discriminate against foreign fishermen.
>
> 2. Coastal States have, in addition, the right of exclusive exploitation of species closely related to the coast, the life of the country, or the needs of the coastal populations, as in the case of species that develop in territorial waters and subsequently migrate to the high seas, or when the existence of certain species has an important relation to an industry or activity essential to the coastal country, or when the latter is carrying out important works that will result in the conservation or increase of the species".

The following important meeting, the Especialized Inter-American Conference on the Preservation of the Natural Resources, held in Santo Domingo, in 1956, a few weeks later than the Mexico City meeting, did not signify a major advance in the progressive development of the international law of the sea, except the definition of the Continental Shelf concept, due to deep discrepancies arisen particularly between the United States of America and some of the Latin-American States. It has been obseved that in the several years elapsed between this conference and the decade or the 70's little concerned was demonstrated by the Latin-American countries in relation to the still unsolved problems of the law of the sea. This observation makes exception of the close and active contact and activities shown by the CEP system. It is well known that due to this disaggregation the Latin-American originated doctrine of the 200 miles economic zone was defeated

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in the Geneva Conferences[62].

It must be pointed out that Chile was continuously present in these meetings and attentive to the outcomes of the International Law Commission of the U.N. which was at the time preparing the Geneva Conferences. Among the commentaries to the project of articles relating to the continental shelf and related matters presented by the International Law Commission to the Governments of the Member States, Chile makes the following. With reference to the Continental Shelf, Art. 1, Paragraphs 1 and 2:

> "Le Gouvernement chilien estime exactes et acceptables les conclusions de la Commission du droit international sur cette question, car il convient de ne pas perdre de vue que la géologie, si elle peut exercer une influence sur le droit, ne peut jamais lui imposer de règles".

With reference to paragraphs 5 and 6:

> "On a donc écarté dans cette définition, la limite bathymétrique de 200 mètres et on l'a remplacée par un concept juridique modern, celui de la possibilité d'exploitacion du lit at du sous-sol recouverts par la haute mer.
>
> Comme le fait observer for justement le commentaire relatif à l'article premier, les progrès futurs de la technique permettront l'exploitation intensive des resources et des richesses du sol et du sous-sol de la mer, quelle que soit la profondeur des eaux surjacentes".

With reference to paragraphs 7 and 8:

> En raison des considérations que précèdent, le Gouvernement de Chili se voit contraint de formuler des observations à propos des articles 1, 2 and 3 de la deuxième partie du projet préparé par la Commission de Juristes de l'Organization des Nations Unies et il estime qu'il conviendrait de confirmer le droit de créer, pou la chasse et la pêche, une zone exclusive, jusqu'à la distance de 200 milles marins des côtes".

With reference to Art. 2, paragraphs 1 and 7:

"Les conclusions de la Commission de juristes ne tiennent pas compte de la réalité et sont en désaccord avec la pratique internationale.

En effect, les Gouvernements du Mexique, de l'Argentine, du Chili, du Pérou, du Costa Rica, du Guatemala, du Honduras, du Salvador, du Nicaragua, du Brésil et de l'Equateur qui, à des dates différents, ont défini unilatéralement leur attitude a l'égard de ce problème, ont déclaré de facon categorique que leurs droits sur la plate-forme sous-marine contigüe à leur territoire continental et insulaire, vont au delà du simple'contrôle' et de la simple 'jurisdiction', et constituent des droits particuliers et inhérents à la souveraineté et à la propriété.

Ainsi, aux termes de la déclaration officielle chilienne en date du 23 Juin 1947, 'le Gouvernement du Chili confirme et proclame la souveraineté nationale sur tout le plateau continental contigu aux côtes continentales et insulaires du territoire national, quelle que soit la profondeur à laquelle il se trouve, et revendique en conséquence toutes les richesses naturelles que se trouvent sur ledit plateau, sur son sol ou dans son sous-sol, actuellement connues ou qui seront découvertes dans l'avenir'(Memoria del Ministerio de Relaciones Exteriores, 1947, p. 204).

Les déclarations des gouvernements américains précites sont inspirées par des conceptions analogues.

Si l'on tient compte de la notion moderne de plateau continental, la souveraineté et la propriété a l'égard dudit plateau se justifient par diverses raisons.

En premier lieu, cette zone constitue, en réalité, un prolongement, une partie du territoire national et elle doit, par conséquent, relever de la souveraineté de l'État donc le territoire se prolonge sous les yeux, tout comme le reste de son territoire.

Comme l'a fort justement fait observer M. Miguel Ruelas, le plateau continental appartient au pays riverain, parce que, en général, les richesses que composent les sédiments terreux recouvrant la zone littorale du plateau

(ou plate-forme) ont été arrachées par les courants (voir Miguel Ruelas, "La Cornisa Continental Territorial" Revista de Derecho Internacional, IX^{e} annee, t. XVII, janvier a juin 1930, p. 130).

En deuxième lieu, la sécurité, et le droit de conservation de l'État riverain sont des facteurs déterminants. Ces droits fondamentaux comportent la faculté pour un État de disposer de son territoire et de utiliser par tous les moyens possibles.

Or, refuser à un État contigu à la mer la souveraineté et la propriété a l'égard du plateau sous-marin, revient à lui enlever un partie de territoire qui lui appartenait au moment où il est devenue sujet de droit international. En autres termes, c'est le priver d'une source de richesses que, tôt ou tard, du fait du developpement naturel de toutes les collectivités, il voudra exploiter et dont il voudra pouvoir disposer en pleine proprieté.

Un autre aspect du droit de conservation consite à prendre toutes les mesures indispensables en vue de repousser une agression et de se soustraire a un péril imminent.

Le fait pour un pays de déclarer qu'il doit avoir sur le plateau continental des droits de souveraineté, de propriété et de jurisdiction exclusifs, atténue ce danger et évite une source de conflits entre les nations.

En effect, un État étranger puissant, désireux d'exploiter réellement ou en apparence les ressources que se trouvent dans les eaux contigües à la mer territoriale d'un autre État, pourrait édifier des installations et autres ouvrages appropries, que entraîneraient une perte d'éléments naturels pour l'État riverain, et pourraient dégénérer en menace positive contre la sécurité et l'intégrité territoriale de cet État.

En troisième lieu, il faut considérer la pêche comme un facteur essentiel et une nécessité vitale étant donné que les espèces pourraient s'éteindre si les bancs de poissons de haute mer, que se trouvent généralement dans ce s régions, pouvaient être exploités par le premier occupant.

Enfin, les eaux et les régions sous-marines mentionnées plus haut constituent pour le Chili un véritable espace vital en raison de la configuration géographique de ce pays.

D'ailleurs, la pratique internationale confirme la doctrine du prolongement de la souveraineté sur la plateforme continentale et sur les eaux surjacentes.

En raison des considérations qui précèdent, le Gouvernement du Chili doit se prononcer contre l'article 2 du projet et propose de confirmer le principe seon lequel la souveraineté, la propriété et la jurisdiction sur le plateau continental appartiennent de plein droit à l'État riverain".

With reference to Articles 3 and 4:

"Les principes admis par la Commmission mènent à une contradiction évidente étant donné que, ainsi que nous l'avons déjà indiqué dans les presentes observations, le plateau continental devrait être soumis à la souverainete de l'État dont le territoire terrestre se prolonge sous les eaux, c'est-à-dire que cet État devrais pouvoir y exercer tous les pouvoirs. Ainsi l'État riverain exercerait les droits de souveraineté et de propriété sur le lit et le sous-sol du plateau continental, mais par contre, il ne pourrait exercer sur les eaux que recouvrent cette zone, que des droits limités de caractère économique et administratif, ce qui pourrait donner naissance à des conflits de competence.

Il convient donc d'harmoniser ces principes par l'application d'une règle ou d'une norme que tienne compte des réalités et que sauvegarde les droits prioritaires du pays riverain.

Lorsqu'il n'existe pas de norme que permette de résoudre les différends entre les nations, l'esprit juridique crée une règle quelconque, que le temps se charge de consolider si elle es bonne, de modifier ou de remplacer si elle se révèle mauvaise.

Cela étant, le Gouvernement du Chili doit se prononcer contre les articles 3, 4, 5 et 6 du projet, et propose de les remplacer par une norme nouvelle en vertu de la-

quelle on proclamerait que la souveraineté de l'État riverain s'étend sur son plateau continental et sur les eaux océaniques que le recouvrent, sous réserve des restrictions qu'impose le droit international en faveur du 'passage innocent et inoffensif des navires de toutes les nations, et de la pose et de l'entretien des câbles sous-marins'.

La pratique d'un certain nombre d'États semble s'orienter vers cette théorie de la souveraineté qu'a adoptée le Gouvernement de la République. En effet, les Gouvernements de la République Argentine, du Chili, du Pérou, du Costa-Rica, du Honduras et du Nicaragua, ont proclamé de façon catégorique, par des declarations faites respectivement les 11 octobre 1946, 23 juin 1947, 1er août 1947, 27 juillet 1948, 28 janvier 1950 et 1er novembre 1950, la souveraineté desdits États sur le plateau ou socle continental contigu à leurs côtes, ainsi que sur les eaux surkacentes, dans toute la mesure nécessaire pour conserver à ces pays la propriété des richesses et ressources que s'y trouvent".

With reference to the Second Part: Related Subjects, Resources of the Sea, Art. 1 and 2 (partim):

Le problème du plateau continental est étroitement lié à celui de la conservacion des richesses de la mer; c'est pouquoi la Commission du droit international a préparé trois articles que son inspirés par les vieilles coutumes du droit international en vertu desquelles il résultait du principe de la liberté des mers qu'aucun État ne puvait se réserver d'une manière absoulue à l'égard de toutes les nations le monopole de la chasse et de la pêche dans une partie quelconque de ce que l'on appelle la mer libre ou la haute mer.

Telle était la loi ou la norme internationale, mais il convient d'étudier le principe de la liberté des mers en fonction des faits nouveaux.

En réalité, ce sont les États que entretiennent des armées de mer puissantes, des flottes marchants et de pêche, que possèdent des bases et des ports de ravitaillement, des bâtiments et des établissements industriels maritimes, que dominent, exploitent et, pourrait-on presque dire, possèdent les mers. Les ressortissants

> de ces États son les seuls à bénéficier pleinement de tous les avantages que procure la prétendue liberte des mers.
>
> Cet état de choses exerce une influence directe sur l'étendue de la mer territoriale, car étendre cette zone d'eaux territoriales, dans laquelle les usages internationaux on consacré le droit exclusif de chaque État riverain a la pêche et à la chasse, serait contraire aux grand intérêts maritimes.
>
> Nul n'ignore, par example, l'activité déployée, au détriment des États riverains de l'océan Pacifique, par des flottes de pêche contrôlées effectivement par ces grands intérêts maritimes".63.
>
> .....

There is also a comment on the Contiguous Zone, Art. 4, where the Chilean Government insists in that the coastal State should have jurisdiction over a larger zone. It is interesting to quote in part the reaction of Chile at the end of the Geneva Conferences.

> "The lack of an international concensus of opinion, sufficiently comprehensive and just, to recognize and balance within reason all the rights and interests, aswell as the results obtained there, leave the regional system of the South Pacific, which represent the protection of vital conditions for the countries of that region, in full force until just and humane solutions have been found"64.

In time followed the 200 miles declarations of the Atlantic countries of South America. Under this new circumstance the Montevideo Meeting took place between May 4 - 8, 1970, where only the Latin American countries with a 200-miles claim met. This meeting brought about the 1970 Montevideo Declaration of Principles on the Law of the Sea. A few months later Chile participated in the Lima Conference on the law of the sea, where 20 Latin-American

States, with diferent law of the sea regimes, met. The 1970 Lima Declaration on the Law of the Sea, which begins pointing out the "geographical, economic and social relationship between the sea, the land and the people that inhabits it, relationship that results in a legitimate property in favor of the coastal populations for the utilization of the natural resources that the marine environment offers them". As a consequence of this relationship, the right is recognized for the coastal State to establish its sovereignty or maritime jurisdiction in accordance with reasonable criteria, considering its geographic, geological and biological realities and the necessities and socio-economic responsibilities.

And finally it should be stressed that these are the considerations (socio-economic) which are at the basis of the new doctrine of the Law of the Sea elaborated by the Latin-American States, commencing with Chile's 1947 Declaration of the 200-mile jurisdictional claim.

4. Control: This is the extent of offshore areas over which a State purports to have jurisdiction, together with the forms of jurisdiction within these areas which it asserts the right to exercise.

Chile's present legislation contains provisions for a three miles territorial sea, twelve miles exclusive contiguous fishign zone, and a 200 miles of economic zone or patrimonial sea.

Among the actions taken by Chile in this connection are the following.

Unlike some other countries in Latin America, the Chilean Constitution makes not provisions for the maritime spaces[64], although it is interesting to note that the Chilean National Hymn implies some perceived future benefit from the sea[65].

The current Civil Code consults provisions which are to be found in the original version promulgated on December 14, 1855 (Andres Bello Code). In its article 585 it states:

> "The things that nature has made common to all mankind, such as the high seas, are not liable to ownership and nation, enterprise or individual has the right to appropriate them. There use and enjoyment are determined among the individuals of a nation by its laws, and among the different nations by international law".

This is an interesting subject of study because internationally Chile's policy has begun since 1947 to modify the freedom of the sea doctrine in relation to marine resources, particularly fish, first unilaterally and later pluri- and multilaterally with quite a large success for the doctrine of an extended special competence economic zone, and also by supporting an international regime for the seabed and sub-soil management and exploitation of the resources[66]. On the other hace, in the internal scene, the concept of freedom of fishing, as recognized by the liberal Civil Code, survived almost unaltered up to this date, and it has obstaculized conservation and management measures in relation to the fisheries. Industries at times, protected by this principle, have expanded their capacity of catch and processing freely. The state has been confronted thus with a fait accompli and socio-economic problems (labor problems) has had to accept these

expansions with obvious negative implications to the resources. The situation has been slightly modified by the Decree N°524 of 1964, modified by the D. N° 163 of 1970, which establishes the inconvenience in letting industrial fisheries to carry on entirely free, and requires official authorization, which can estipulate maximum catch, and set surveillance on installations and vessels. The property regime, however, has remained unaltered.

Referring to national property, the Code includes the "adjacent sea" (Art. 589) whose breadth is set at one marine league (three nautical miles) as measured from the low-water mark (Art. 593). The Water Code enacted by Law 8944 of January 21, 1948[67], established at 50 Km the breadth of a security and custom zone (Art. 3). With the appearance of Law 9896, of February 22, 1951, Law 8944 was revoked. At the enactment of Law 9909 on April 13, 1951[68], those provisions no longer appeared in the Code[69]. The Water Code as it exists at present does not apply to the sea[70].

As previously mentioned, in June 23, 1947, through the official declaration by the President Gabriel Gonzalez Videla, Chile went on to claim 200 miles of jurisdictional sea, for the purposes of utilizing and preserving the natural resources contained in the waters, seabed and subsoil[71]. It is interesting to note that in 1963, a group of socialist ana communist parlamentaries proposed in the Senate a modification of the Art. 593 of the Civil Code that read as follows:

> "Replace Article 593 of the Civil Code contained in title II on National Property, in the following manner: 'The adjacent sea, to a distance of two

> hundred miles, measured from the low-tide mar, is the territorial sea, the seabed and subsoil, the natural resources existing in that zone, are under the national domain, without prejudice to authorization to private individuals for its use, transit, and innocent passage of vessels from all nations'"[72].

This project produced justified alarm in the country because it meant the introduction of some complicating elements which defeated the essential purpose that inspired the formulation of the 200 mile tesis[73]. The project did not pass.

Consequently the Chilean legislation distinguishes the following maritime spaces:

(1) Territorial sea of three miles (Civil Code, Art. 593).

(2) Contiguous zone for the purpose of security and fiscal law, and additional nine miles (Civil Code, Art. 593), and

(3) Zone of exclusive utilization and conservation of marine resources of 200 miles (Declaration of President Gabriel Gonzalez Videla of 1947, and Declaration of the Maritime Zone, Santiago Declaration of 1952.

Further maritime legislation (approved or under consideration) influenced by the basic legislation referred above are:

(1) The organic Law of the Direction of the Litoral and Merchant Marine (Decree N° 292, July 25, 1953).

(2) Project of Law on the actualization of fishing dispositions, 1952. Not yet approved.

(3) Project of Law on Fishing. Approved by the Economic and Commerce Com-

mission of the Senate, July 2, 1964.

(4) Customs Ordnance, Decree N° 213, July 27, 1953.

(5) Decree N° 221, May 20, 1931 on Navigation on the atmospheric space.

(6) Decree N° 1747, November 6, 1940 on the Chilean Antarctic Territory.

As already mentioned, Chile has not signed any of the Geneva Conventions and it made it clear that its international law of the sea was mainly that derived regionally within the specific bodies created for the purpose in the South Pacific and in Latin America in general.

In effect, the First Conference on the Exploitation and Conservation of the Maritime Resources of the South Pacific, held in Santiago, Chile, August 11-19, 1952, gave birth to the following instruments:

(1) The Declaration of the Maritime Zone.

(2) The Organization of the Standing Committee of the Conference.

(3) The joint Declaration of Fishery Problems in the South Pacific.

(4) The Regulations Governing Whaling in the Waters of the South Pacific.

The organization of the CEP system has been further implemented by several later agreements. Chile, Ecuador and Peru signed at the Second Conference held in Lima on December 4, 1954, the following agreements:

(1) Agreement supplementary to the declaration of soverignty over the Maritime Zone of 200 miles.

(2) Agreement relating to penalties.

(3) Agreement relating to measures of supervision and control in the mari-

time zones of the signatory countries.

(4) Agreement relating to the issue of permits for the exploitation of the maritime resources of the South Pacific.

(5) Agreement relating to the regular annual meeting of the Standing Committee.

(6) Agreement relating to a special maritime frontier zone.

Chile, Ecuador and Peru signed the following resolutions in the Final Act of the Third Meeting of the Permanent Committee of the Conference held in Quito, December 1955:

(1) Resolution on the quota of whalebone whales to be hunted by land stations.

(2) Resolutions on quotas for the pelagic hunting of sperm whales.

(3) Regulations on permits for exploitation of the resources of the South Pacific[74].

In summary, this area of marine affairs of Chile may be the most developed of all the indices of interest in the oceans of Chile, and as we have seen not always in concordance with what happens internally. This is one clear example of the consequences of the lack of integration of the disciplines relating to the ocean.

Chile's interest and control over the Chilean Antarctic Territory should not be overlooked. Chile's claim over a sector of the Antarctic Continent is based on several consistent instruments dating back to the

Treaty of Tordesillas and the fact that the country inherited Spain's rights at the time of the independence in 1810. In 1539 Charles V of Spain is said to have granted Pedro Sanchez de Hoz all territories from the Strait of Magellan to the South Pole west of 40°W. This grant revolved on Pedro de Valdivia and ultimately came under the Captaincy General of Chile. After independence, in 1831, Bernardo O'Higgins, Chile's first president, stated that the southern lands were Chilean territory[75] For an analysis of Chile's bases for the claim see Pinochet de la Barra[76]. In the Decree N° 1747 of the Ministry of Foreign Relations (November 6, 1940), on the Chilean Antarctic Territory, sovereignty is declared over its respective territorial sea. It is therefore understood that all other considerations on jurisdictional seas of Chile, apply, mutatis mutandis, to the national antarctic maritime jurisdiction[77].

Chile's first permanent Antarctic settlement was the Commandant Arturo Prat Base, established in January 1947, at Greenwich Island, and from that time the Maritime Governor of the Chilean Antarctic Territory and an officer in charge of the postal agency have resided there. The second base, manned by the Army,is at the extreme of O'Higgins Land Peninsula (Palmer Peninsula). It was inaugurated in 1948 and received the visit of the only Chief of State ever to step Antarctic territory, President Gabriel Gonzalez Videla, already mentioned because of the 200 mile Proclamation. At present Chile has four bases (with the addition of the Air Force base Pedro Aguirre Cerda, destroyed in the 1967 eruptions at the caldera of Deception Island but replaced immediately by the until then unoccupied Gabriel Gonzalez

Videla base where an Antarctic Biology of the University of Chile had functioned years back, and President Eduardo Frei, a meteorological base) with permanent complements. Scientific research is being performed particularly by civilian teams during the summer months. These programs are sponsored by the Chilean Antarctic Institute and several governmental and state and private universities.

Chile has signed and ratified the Antarctic Treaty in June 21. The Treaty came into effect in June 23, 1961.

5. Perception: Chile's perception of the sea has consisted mostly of isoleted event, in different areas of ocean interest, at different times, making for a gragmented, discontinuous phenomenon, which still is some distance away from achieving the degree of integration to produce a meaningful Chilean Ocean Policy. The situation is changing fast, but still much has to be done in the whole subject of Marine Affairs, whose scope has been tried in this very preliminary survey of Chile's interests in the oceans.

Perception alone, if not integratively informed, may induce to such actions from decision-makers, which not always secure the best results or express the best interest of the country. Without meaning to undermine the doctrine of the 200-mile, it could be argued for example, that the claim was one which did not benefit the long-run interests of the country and actually it is benefiting those countries with more developed interests in the ocean.

Chile contended that because it had little continental shelf it was justified its claim of extended jurisdiction on the bases of a fixed distance from the coast in order to exploit, protect and conserve whatever natural resources were present therein. However, it is clear that the same argument could be used to support the view of narrow belts of national jurisdiction, if is considered that most living resources of the sea are associated with the presence of a shelf too.

Chile's fishery is mostly pelagic (anchovy) and performed within a few miles from the coast. It must be considered too that the anchovy stock exploited by Chile is only the southern fringe of the main stock which is exploited by Peru.

Exploitable ground fish are present within the shelf distance and shrimp and crab-shrimp stocks too. Other oceanic fisheries, such as tuna and related fish, are of such mobility that cross any jurisdictional boundary that might be chosen and their utilization and conservation can only be done within the frame of international agreements anyway. Minerals from the sea are exploitable according to the state of technology and investment capability. In the case of Chile, it probably should be the last one to be interested in this exploitation due to its stakes in the copper mining industry on land. Oil and gas could be exploited within present internatio-al agreements. The conclusion might be then that had Chile been originally a sea-going people, with distant fishing interests, it could have done a good case for its realities of geography, and it would have had every reason

to oppose any extended jurisdiction claim over the adjacent seas because its sea does not lend itself to an important utilization on the basis of a broad claim, that is the marginal benefits of such claim appear not to be greater than the marginal costs.

This observations might also be applicable to the United States of America, a country with an admittedly much more diversified interest in the oceans, where security on a global scale plays a major role, which has strongly advocated against such extensions of jurisdiction and which from the point of view of fisheries is one of the States that is likely to benefit the most from this tesis.

III. REFERENCES AND NOTES:

1. Alexander, L.M., Indices of National Interest in the Oceans. Ocean development and International Law Journal, 1973, 1(1):21-49.

2. Bridges, E.L.,Uttermost part of earth. E.P. Dutton and Co., N.Y., 1950.

3. Kvaran, E.R., The effect of labour costs on investment and management patterns in the fishing industry. FAO, FE:IFI/Bp/61, 1969, 10 p., at p. 3.

4. Finer, H., The Chilean Development Corporation: A Study in Planning to raise living standards. International Labour Office, Montreal, 1947, 84 p., at p. 59.

5. Shapiro, S., The Fisheries of Chile. U.S. Dept. of the Interior, Circ. N° 234, Washington, D.C., Nov. 1965, 15 p., at p. 1.

6. Cabezas, R., Administracion y Desarrollo Pesquero. Seminario sobre la Actividad Pesquera en Chile, Universidad Catolica de Valparaiso, Edic. Universitarias de Valparaiso, Dic. 1970, p. 61-67, at p. 62.

7. Holmsen, A.A., Management of the Peruvian Anchoveta Resource. NOAA Techn. Report, N.M.F.S., Circ. 371, Seattle, W.A., April 1973, p. 106-111, at p. 106.

8. See above note 7, at p. 109.

9. Folsom, W.B., Fisheries of Chile, 1971. Foreign Fisheries Leaflet N° 73-21, Washington, D.C., Nov. 1973, 17 p., at p. 11.

10. Idyll, C.P. , The anchovy crisis. Scientific American, June 1973, p. 22-29.

11. See above note 9, at p. 5.

12. See above note 9, at p. 12.

13. Ministry for Foreign Affairs of Iceland, Fisheries Jurisdiction in Iceland. Reykjavik, Febr., 1972,46 p., at p. 9.

14. See above note 6, at p. 62-64.

15. Achurra, M. and A. Couve, Manpower in the Fisheries Sector or Chile.

FAO Fisheries Report, N° 94, Rome, 1971, 67 p., at p. 1.

16. Riffart, C. y M. Valenzuela, El desarrollo de la pesca artesanal. In: Seminario sobre la actividad pesquera en Chile, Universidad Catolica de Valparaiso, Chile, Dic. 1970, p. 85-94, at p. 85.

17. Economic Bulletin for Latin America, 1970, vol. 15(2): 11 p.

18. Centro de Estudios del Pacifico, Los estudios del Pacifico Sur y su proyeccion cientifica regional. Revista de Estudios del Pacifico, N° 1, April 1971, Valparaiso, Chile, p. 9-51, at p. 42.

19. See note 18 above, at p. 43-44.

20. Worcester, D.E., Sea Power and Chilean Independence. Univ. of Florida Monographs, N° 15, 1962, 87 p.

21. Burr, R.N., By Reason or Force: Chile and the Balancing of Power in South America, 1830-1905. University of California Press, Berkeley, 1965, 322 p.

22. Hough, R., The Blind Horn's Hate: Cape Horn and the Uttermost South. Hutchinson of London, 1971, 336 p.

23. Pelliza, M.A., La cuestion del Estrecho de Magallanes. Edit. Universitaria, Buenos Aires, 1969. 305 p.

24. Monaghan, J. Chile, Peru and the California Gold Rush of 1849. Univ. of California Press, Berkeley, 1973, 8. 312 p.

25. See note 20 above.

26. See note 24 above, at p. 43.

27. See note 21 above, at p. 59.

28. Memoria del Ministro de Guerra y Marina al Congreso Nacional de 1844. Documentos Parlamentarios, 2, p. 309-321, fide note 22, at p. 72.

29. Uribe O., L., Nuestra marina militar, desde la liberacion de Chiloe (1826) hasta la guerra con Espana (1865). Valparaiso, Imprenta de la Armada, 1914, p. 102.

30. See note 26 above, at p. 312.

31. See note 22 above, at p. 176.

32. Instituto Hidrografico de la Armada de Chile, Principales Disposiciones Legales Relacionadas con el Instituto Hidrografico de la Armada, 1874-1973. I.H.A. Misc. 4505, 1973, 41 p., Anexo con los Estatutos del Comite Oceanografico Nacional.

33. Siervers, H.A., Estado actual de la investigacion de la oceanografia fisica y quimica en Chile. Revista de Marina, 962, 90(1), Jan.-Febr. 1973, p. 25-35.

34. Sievers, H.A., Una decada de investigaciones oceanograficas. Revista de Marina, 662, 85(1), Jan.-Febr. 1968, p. 4-20.

35. Ercilla, Santiago de Chile, N°2000, 28 Nov., 1973, at p. 34-35.

36. Personal communication from Dr. Carlos Mordojovic, Instituto de Investigaciones Geologicas, Casilla 10465, Santiago de Chile, 1974.

37. Orrego, V., F., Chile y el Derecho del Mar. Edit. Andres Bello, Santiago de Chile, 1972, 399 p., at p. 46.

38. Stutzin, G., Presencia de San Francisco. Edit. Nacional Gabriela Mistral, Ltda., Santiago de Chile, 1974, 346 p., at p. 261.

39. Mac Phail, D.D., Chile:Processes of Social Evolution. Part I. Focus 24 (7), March 1974, 8 p., at p. 4.

40. Sampling was performed during the 59-5 Cruise of the N.S.F.'s R/V Hero by the author.

41. Bridges, E.L., Uttermost part of the Earth. London, 1948.

42. See note 16 above, at p. 86.

43. Scott, A., Natural Resources: The economics of conservation. Mac Clelland and Stewart Limited, 1973, XII, 313 p., at p. 36.

44. Bello, A., Principios de Derecho Internacional. Santiago de Chile, 1832.

45. Merino, A., Legislacion Pesquera Chilena. In: Seminario sobre la actividad pesquera en Chile. Universidad Catolica de Valparaiso, 1971, p. 71 79, at. p. 73. See also note 46 below, at p. 84.

46. Comision Permanente del Pacifico Sur (CEP), Legislacion Maritima y Pesquera Vigente en Chile. Secretaria General, Quito, 159 p., at p. 79.

47. See note 37 above, at p. 249.

48. See note 46 above.

49. U.S. Dept. of the Interior, Fisheries of Chile, 1965. Foreign Fisheries Leaflet, Dec. 1966, 23, 1, 19 p.

50. See note 45 above, at p. 73.

51. Conferencia Sobre Explotacion y Conservation de las Riquezas Maritimas del Pacifico Sur (CEP), Convenios y otros documentos 1952-1969. 3rd. Ed., Secretaria General, Lima, Enero 1970, 146 p., at p. 38. Also an English version, 1967, 45 p. at p. 25. See also Mc Chesney, B., International Law Situation and Documents-1956. Naval Was College Blue Book Series, 1957,vol. 51, p. 264-289, at p. 220

52. Stuardo, J., Informe sobre los estudios de mitilicultura realizados hasta Septiembre de 1961. Santiago.

53. Primer Congreso Nacional de Cientificos, Julio-Agosto 1972, Santiago de Chile, Comision Nacional de Investigacion Cientifica y Tecnologica (CONICYT).

54. See note 1 above, at p. 32.

55. See note 39 above, at p. 4.

56. Martner, G., The Economic Aspects of Allende's Government:Problems and Prospects. In: Medhurst, K. (Ed.) Allende's Chile. Hart Davis, Mac Gibbon London, 1972, 200 p., at p. 135.

57. Benham, F. and H.A. Holley, A Short Introduction to the Economy of Latin America. Oxford Univ. Press.

58. Thome, J.R., A Brief Survey of the Chilean Agrarian Reform Program. Land Tenure Center Newsletter, N° 28. Madison: The University of Wisconsin (September 1968-February 1969), at p. 1.

59. See note 39 above, at p. 7.

60. These ten countries are: Argentina, Brasil, Chile, Costa Rica, Ecuador, El Salvador, Nicaragua, Panama, Peru and Uruguay.

61. Article 67 of the Charter of the Organization of American States, signed at the Conference. See also: UN Document A/CN.4/102, Cooperation with the Inter American Bodies. Yearbook of the I.L.C., 1956, vol. 2, p. 266-251.

62. Vargas, E., Mar Territorial y Mar Patrimonial. Documento de Trabajo N°2,

Instituto de Ciencia Politica, Univ. Catolica de Chile, Agosto 1971, 54 p., at p.6-13.

63. UN Document A/CN.4/60. Regime of the High Seas. 4th Report, 19 Jan. 195[illegible], at p. 5.

64. Garcia Amador, Latin America and the Law of the Sea. Law of the Sea Institute, University of Rhode Island, Occ. Paper N° 14, July, at p. 12.

65. The modern hymn, written (except th chorus) by Eusebio Lillo R. in 1846, with music of Ramon Carnicer. The pertinent passage reads:

"y ese mar que tranquilo te baña
te promete un futuro esplendor".

"and that sea that gently bathes you
promises a future splendor"

66. See note 37 above, at p. 180.

67. Diario Oficial, Febr. 11, 1948. Santiago de Chile.

68. Diario Oficial, May 28, 1951, Santiago de Chile.

69. See note 68 above.

70. See note 37 above, at p. 11.

71. An English version in: Naval War College Blue Book Series, vol. 46, 1950, at p. 183.

72. Presented by Sres. Allende, Ampuero, Rodriguez, Corbalan and Quinteros. Diario de Sesiones del Senado, Sesion 13, 19 de Noviembre de 1963. Anexo de Documentos, pags. 1314 et seq.

73. See note 37 above, at p. 12.

74. Garcia Sayan, Agreements and other Documents, 1952-66. English Version. Conference on the Exploitation and Conservation of the Maritime Resources of the South Pacific (CEP), General Secretariat, Lima, Jan., 1967, 45 p.,at p. 1.

75. Wilson, R.E., National Interests and Claims in the Antarctic. Arctic J. of the Arctic Institute of North America, vol. 7(1): 15-32, at p. 18.

76 Pinochet de la Barra, O., La Antartica Chilena. Santiago 1948.

77. See note 37 above, at p. 15.